

## 2006 Buick Lucerne CXS

2006 RESTRAINTS SIR - Lucerne

### 2006 RESTRAINTS

#### SIR - Lucerne

## SPECIFICATIONS

### FASTENER TIGHTENING SPECIFICATIONS

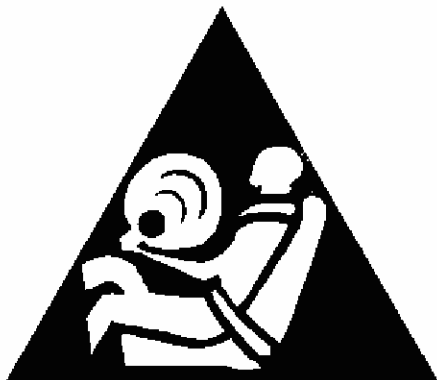
#### Fastener Tightening Specifications

Application	Specification	
	Metric	English
Child Seat Bracket Nuts	41 N.m	30 lb ft
Child Seat Tether Anchor Bolts	30 N.m	22 lb ft
Left and Right Front Seat Upper and Lower Retractor Nuts	55 N.m	41 lb ft
Left and Right Rear Shoulder Belt Retractor Bolts and Nuts	30 N.m	22 lb ft
Rear Seat Belt to Floor Pan Bolts	41 N.m	30 lb ft
Rear Seat Buckle/Seat Back Anchor Bolts	41 N.m	30 lb ft
Rear Seat Center Shoulder Belt Retractor Bolt	30 N.m	22 lb ft

## SCHEMATIC AND ROUTING DIAGRAMS

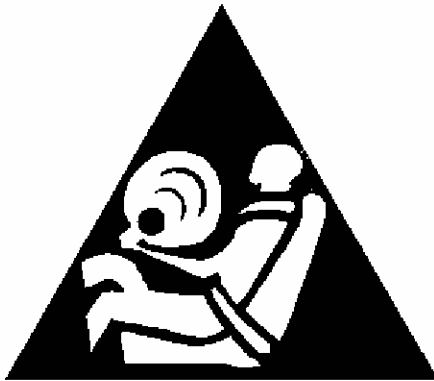
### SIR SCHEMATIC ICONS

#### SIR Schematic Icons

Icon	Icon Definition
	<p><b>CAUTION:</b></p> <p>When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to <b>SIR Disabling and Enabling</b>. Failure to observe the correct procedure could cause deployment of the SIR components, personal injury or unnecessary SIR system repairs.</p> <p><b>IMPORTANT:</b></p>

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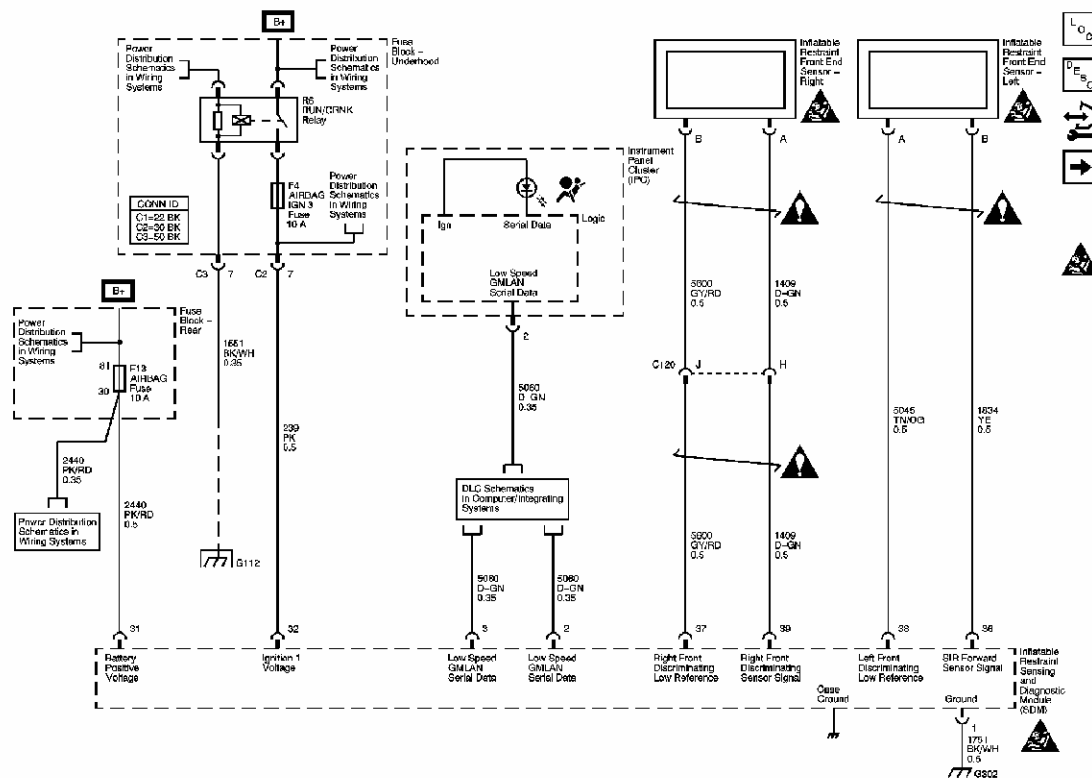
#### IMPORTANT:

- In order to prevent accidental deployment, the shorting bars close in order to short the connectors when the connectors are separated.
- Twisted-pair wires provide an effective shield that helps protect sensitive electronic components from electrical interference. If the wires were covered with shielding, install new shielding.

In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted-pair wires shown :

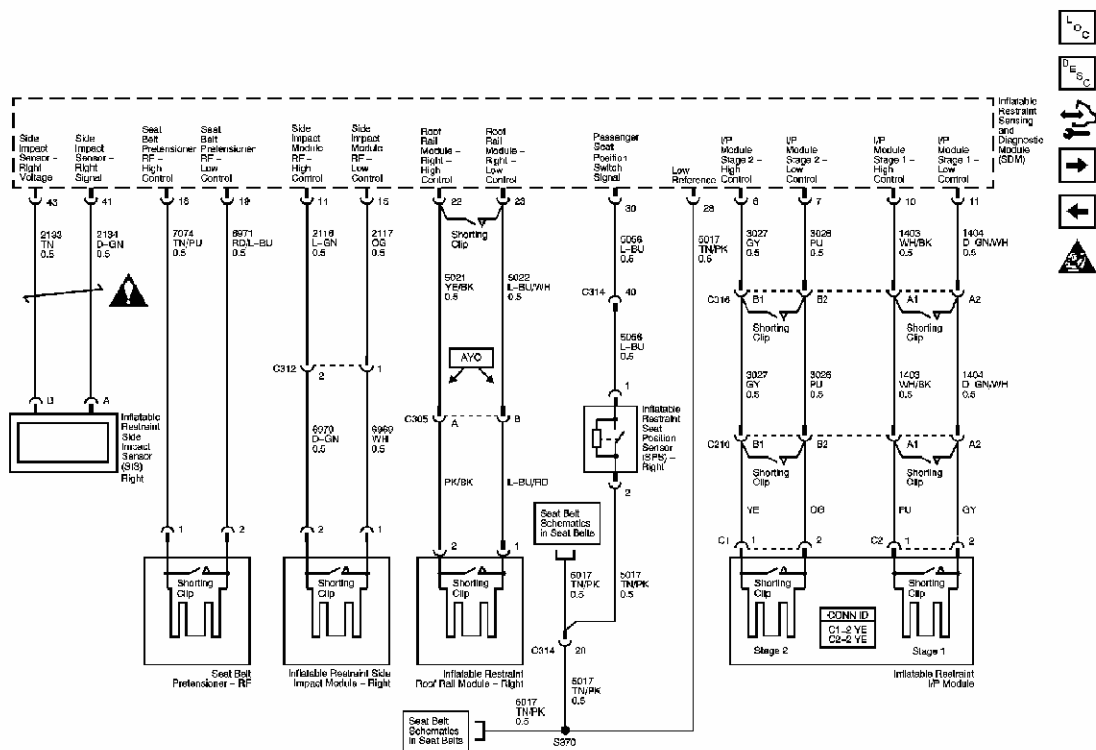
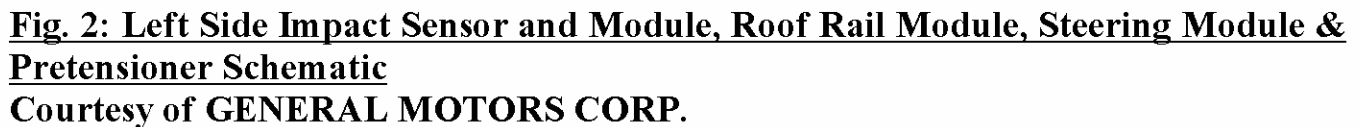
- The wires must be twisted a minimum of 9 turns per 31 cm (12 in) as measured anywhere along the length of the wires
- The outside diameter of the twisted wires must not exceed 6.0 mm (0.25 in)

### SIR SCHEMATICS

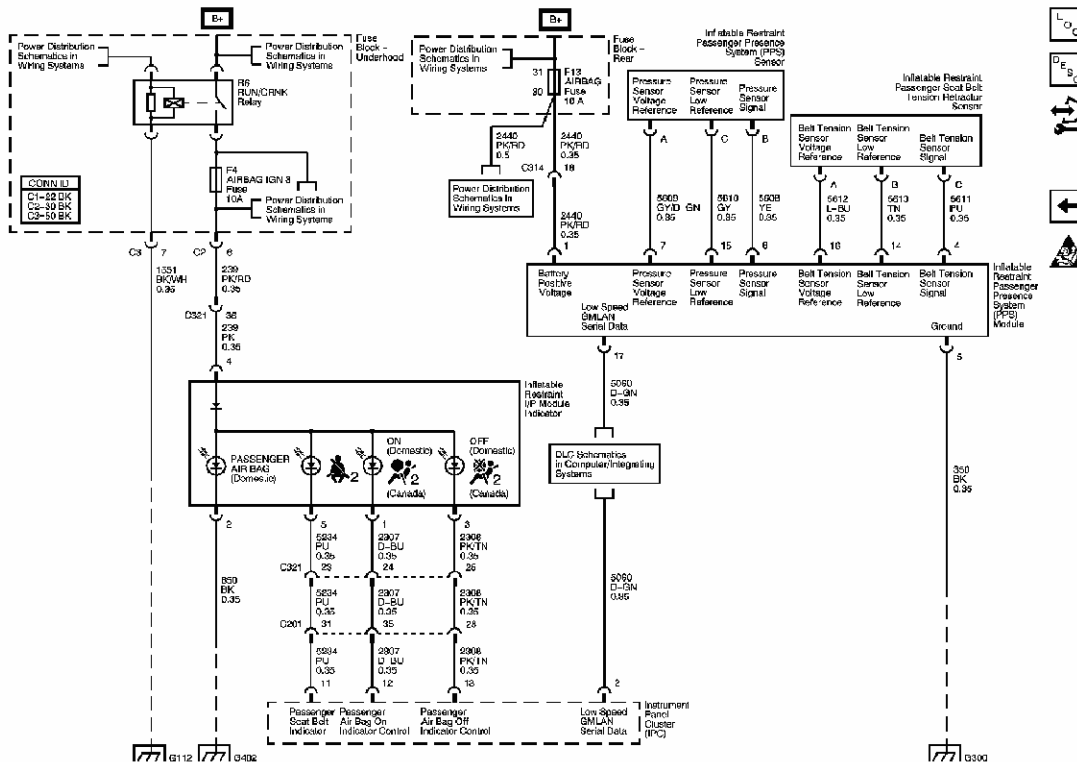


**Fig. 1: Indicators, Power, Ground & Front End Sensors Schematic**  
 Courtesy of GENERAL MOTORS CORP.

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**Fig. 3: Right Side Impact Sensor and Module, Roof Rail Module, I/P Module & Pretensioner Schematic**  
 Courtesy of GENERAL MOTORS CORP.

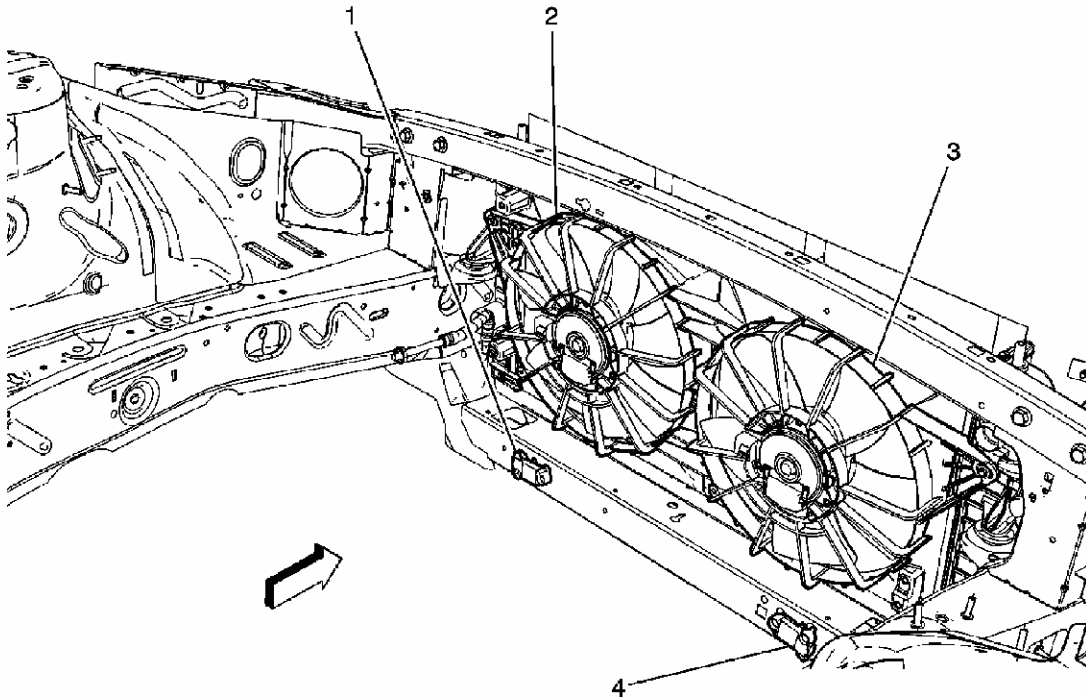


**Fig. 4: Passenger Presence System (PPS) Schematic**  
 Courtesy of GENERAL MOTORS CORP.

## COMPONENT LOCATOR

### SIR COMPONENT VIEWS

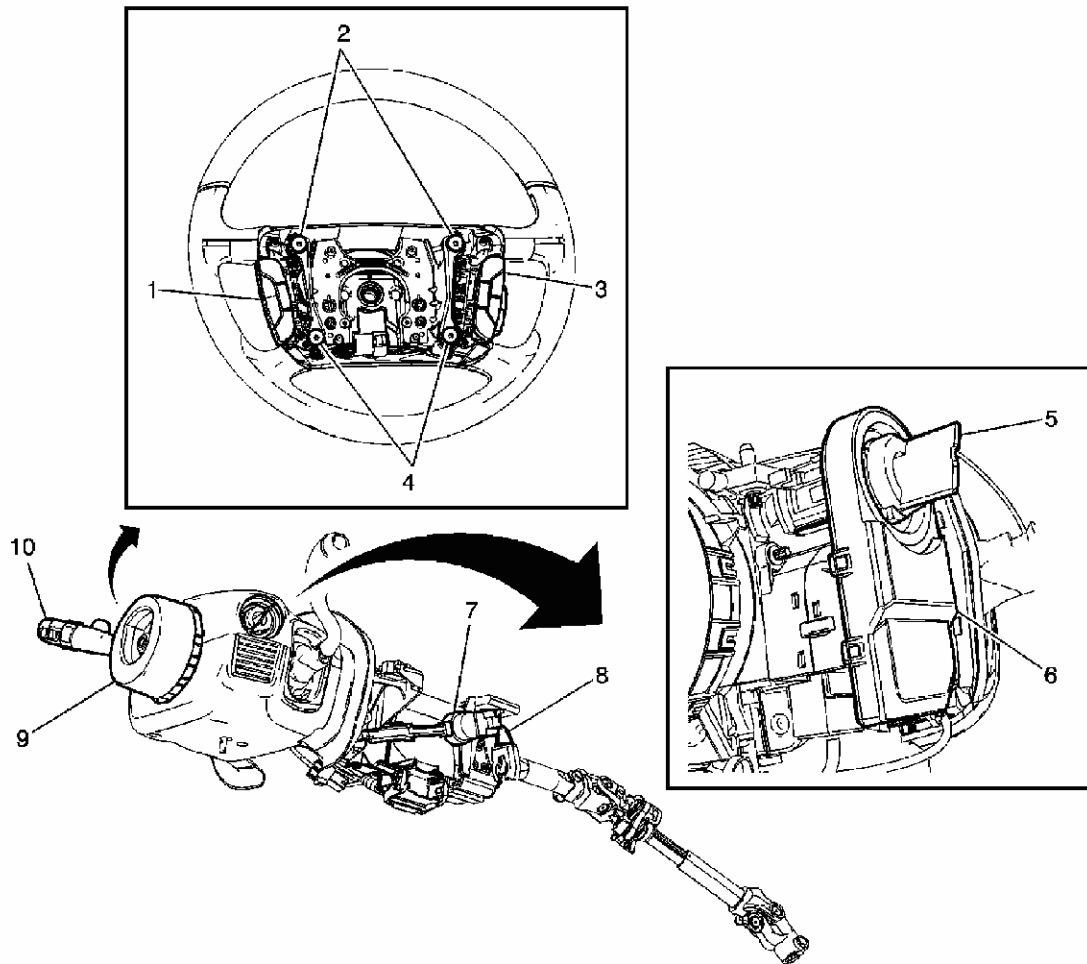




**Fig. 5: View Of Front Of Engine Compartment**  
**Courtesy of GENERAL MOTORS CORP.**

**Callouts For Fig. 5**

Callout	Component Name
1	Inflatable Restraint Front End Sensor - Left
2	Cooling Fan - Left
3	Cooling Fan - Right
4	Inflatable Restraint Front End Sensor - Right



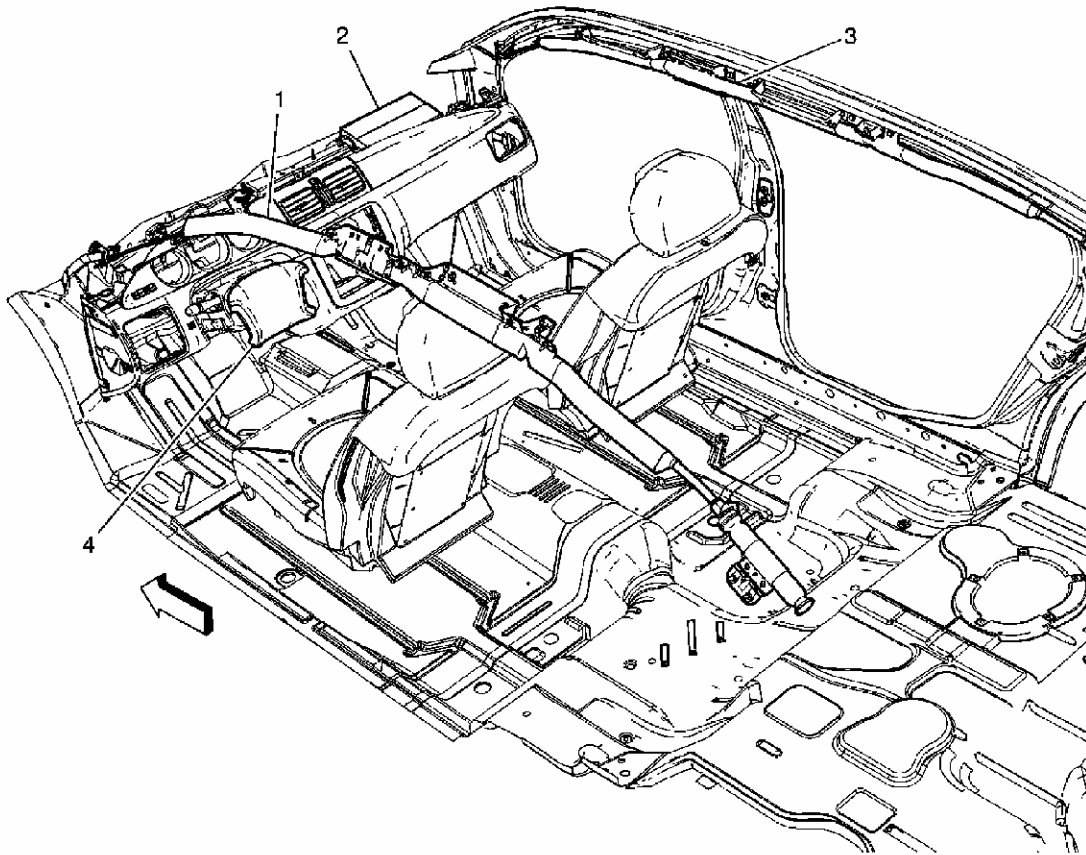
**Fig. 6: View Of Steering Column Components**  
**Courtesy of GENERAL MOTORS CORP.**

**Callouts For Fig. 6**

Callout	Component Name
1	Steering Wheel Control Switch - Left
2	Horn Switches
3	Steering Wheel Control Switch - Right
4	Horn Switches
5	Ignition Switch
6	Theft Deterrent Module (TDM)
7	Ignition Lock Cylinder Solenoid (A51)
8	Steering Angle Sensor (JL4)
9	Inflatable Restraint Steering Wheel Module Coil
10	Turn Signal/Multifunction Switch

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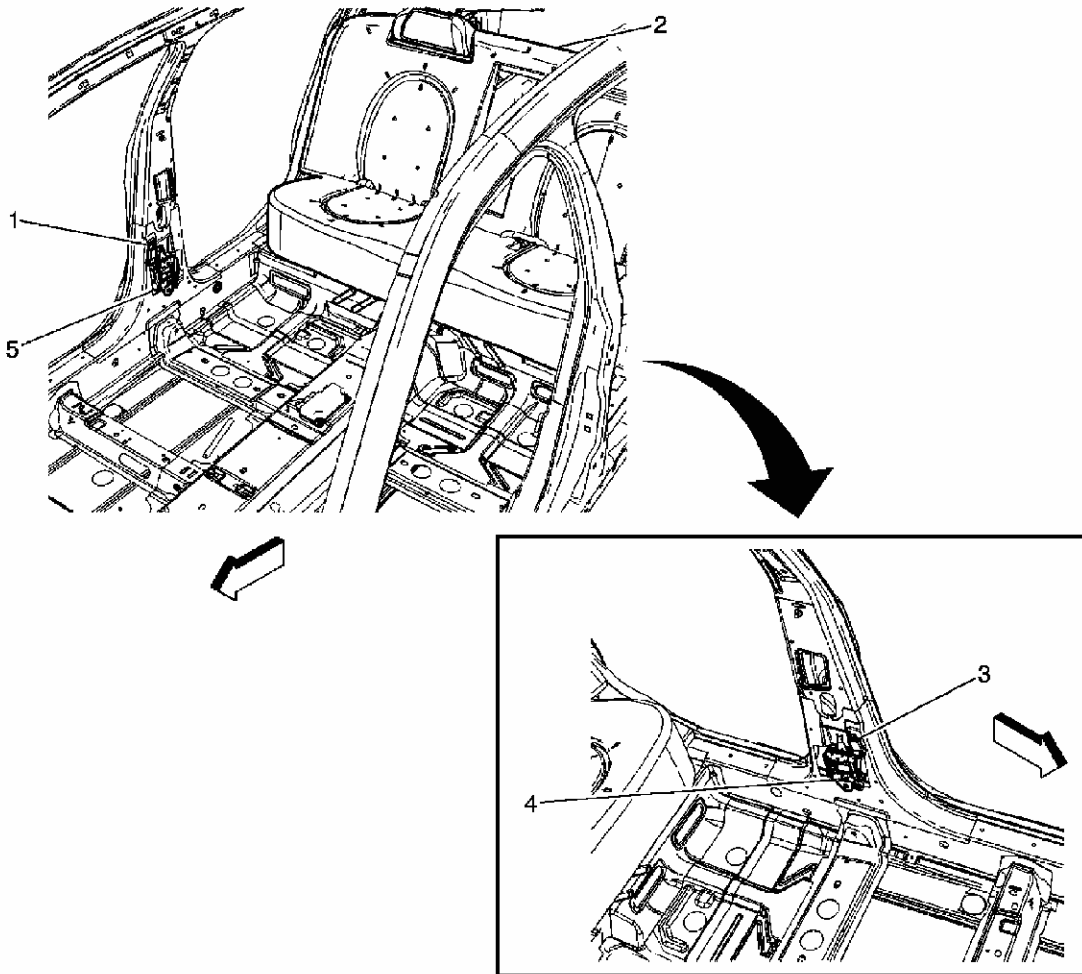
**Fig. 7: Locating Air Bags**  
Courtesy of **GENERAL MOTORS CORP.**

### Callouts For Fig. 7

Callout	Component Name
1	Inflatable Restraint Roof Rail Module - Left (AY0)
2	Inflatable Restraint I/P Module
3	Inflatable Restraint Roof Rail Module - Right (AY0)
4	Inflatable Restraint Steering Wheel Module

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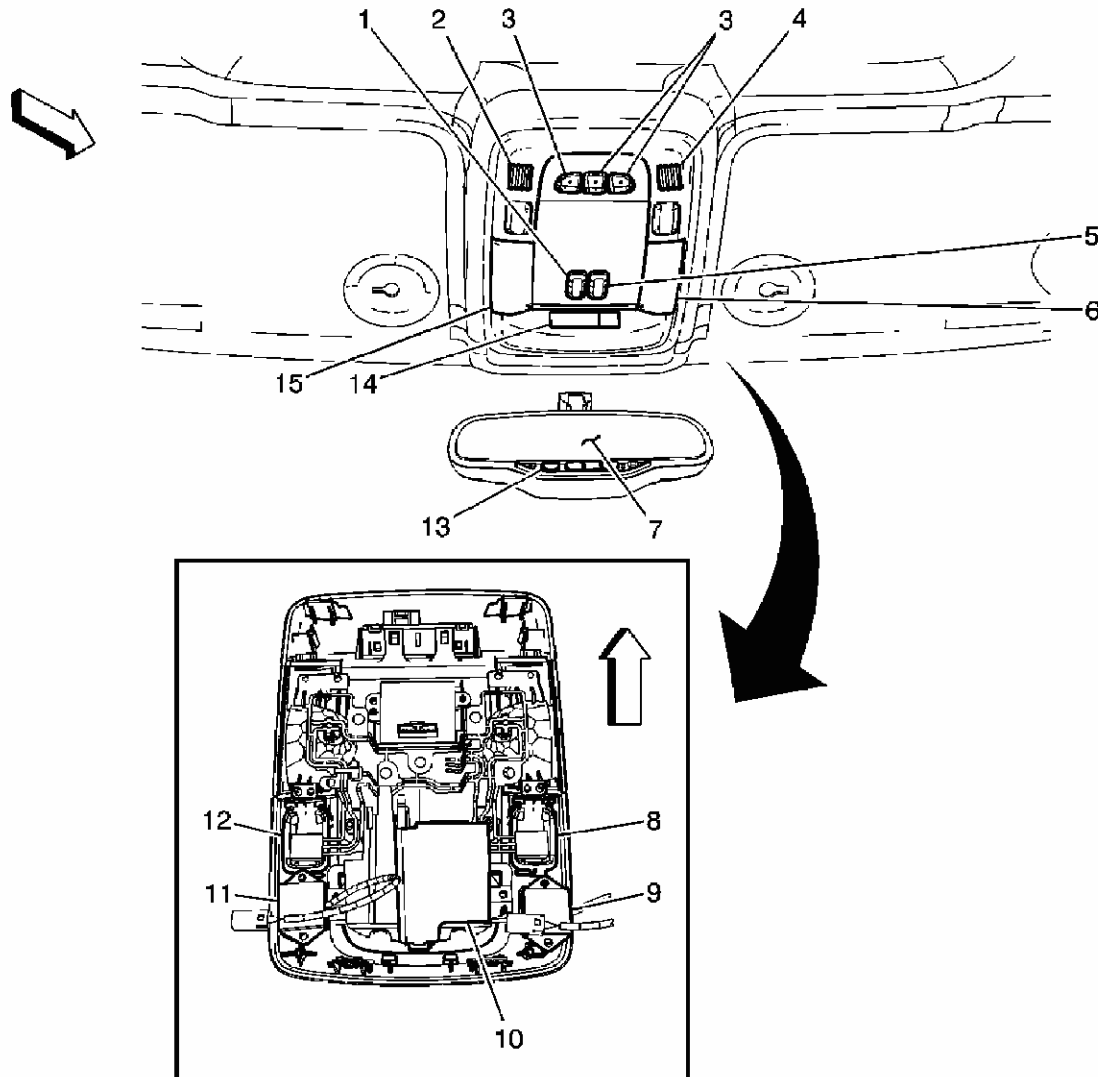
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**Fig. 8: View Of Bottom Of B-Pillars**  
Courtesy of GENERAL MOTORS CORP.

### Callouts For Fig. 8

Callout	Component Name
1	Inflatable Restraint Side Impact Sensor - Right
2	Rear Seat
3	Inflatable Restraint Side Impact Sensor - Left
4	Seat Belt Pretensioner - LF
5	Seat Belt Pretensioner - RF



**Fig. 9: Identifying Overhead Console & Inside Rearview Mirror Components**  
 Courtesy of GENERAL MOTORS CORP.

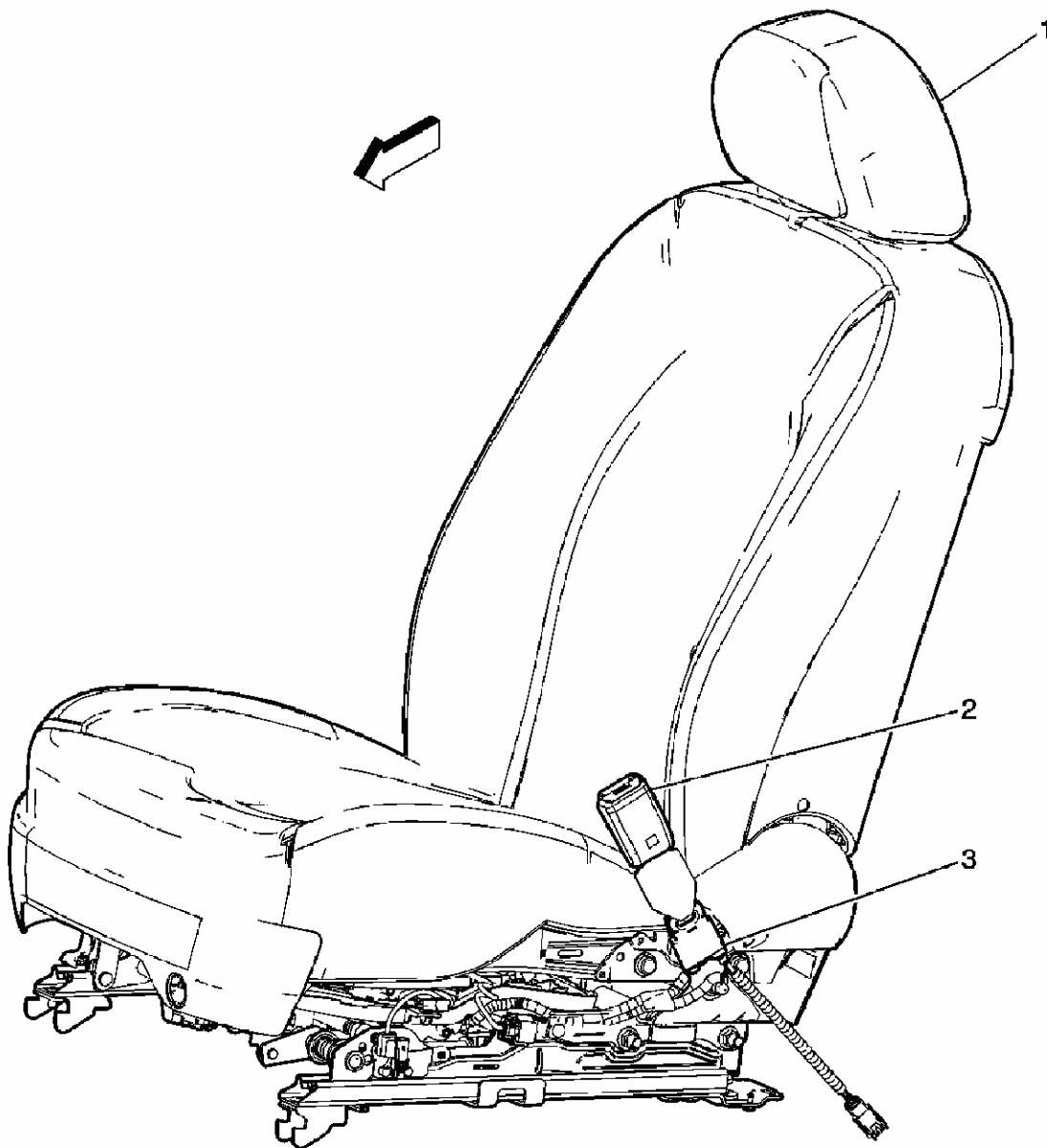
**Callouts For Fig. 9**

Callout	Component Name
1	Sunroof Switch - Open/Close (CF5)
2	Cellular Microphone (UE1, U3U)
3	Garage Door Opener Buttons (UG1)
4	Cellular Microphone (UE1, U3U)
5	Sunroof Switch - Vent (CF5)
6	Courtesy Lamp - Overhead Console - Right
7	Inside Rearview Mirror
8	Courtesy Lamp Switch - Right
9	Cellular Microphone (UE1, U3U)

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10	Garage Door Opener Transmitter (UG1)
11	Cellular Microphone (UE1, U3U)
12	Courtesy Lamp Switch - Left
13	Onstar Button Assembly
14	Inflatable Restraint I/P Module Indicator
15	Courtesy Lamp Overhead Console - Left



**Fig. 10: View Of Left Side Of Front Passenger Seat**  
Courtesy of GENERAL MOTORS CORP.

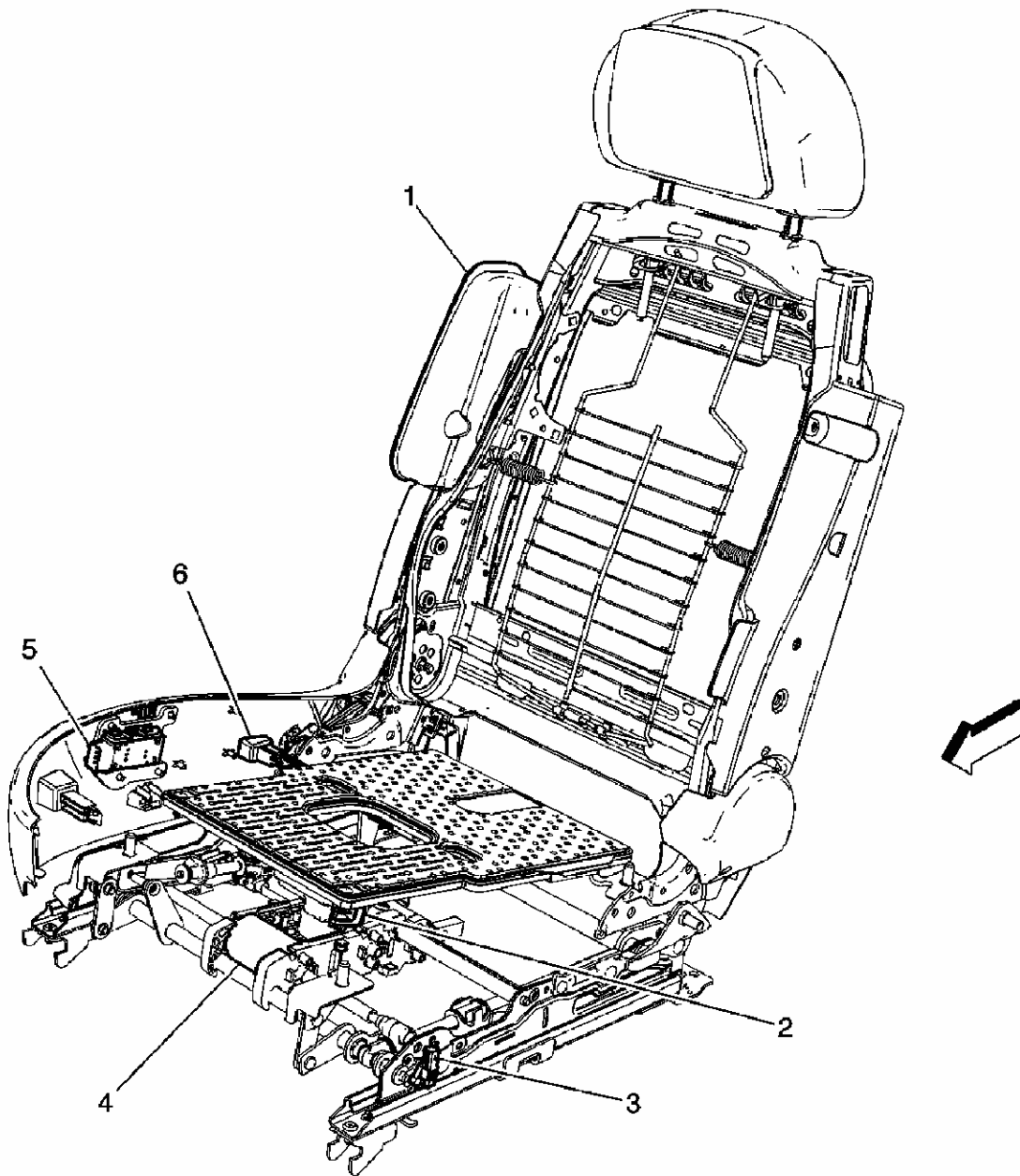
### Callouts For Fig. 10

Callout	Component Name
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1	Front Passenger Seat
2	Seat Belt Switch
3	Inflatable Restraint Front Passenger Seat Belt Tension Retractor Sensor (Part of Seat Buckle Assembly)



**Fig. 11: View Of Passenger Seat**  
Courtesy of **GENERAL MOTORS CORP.**

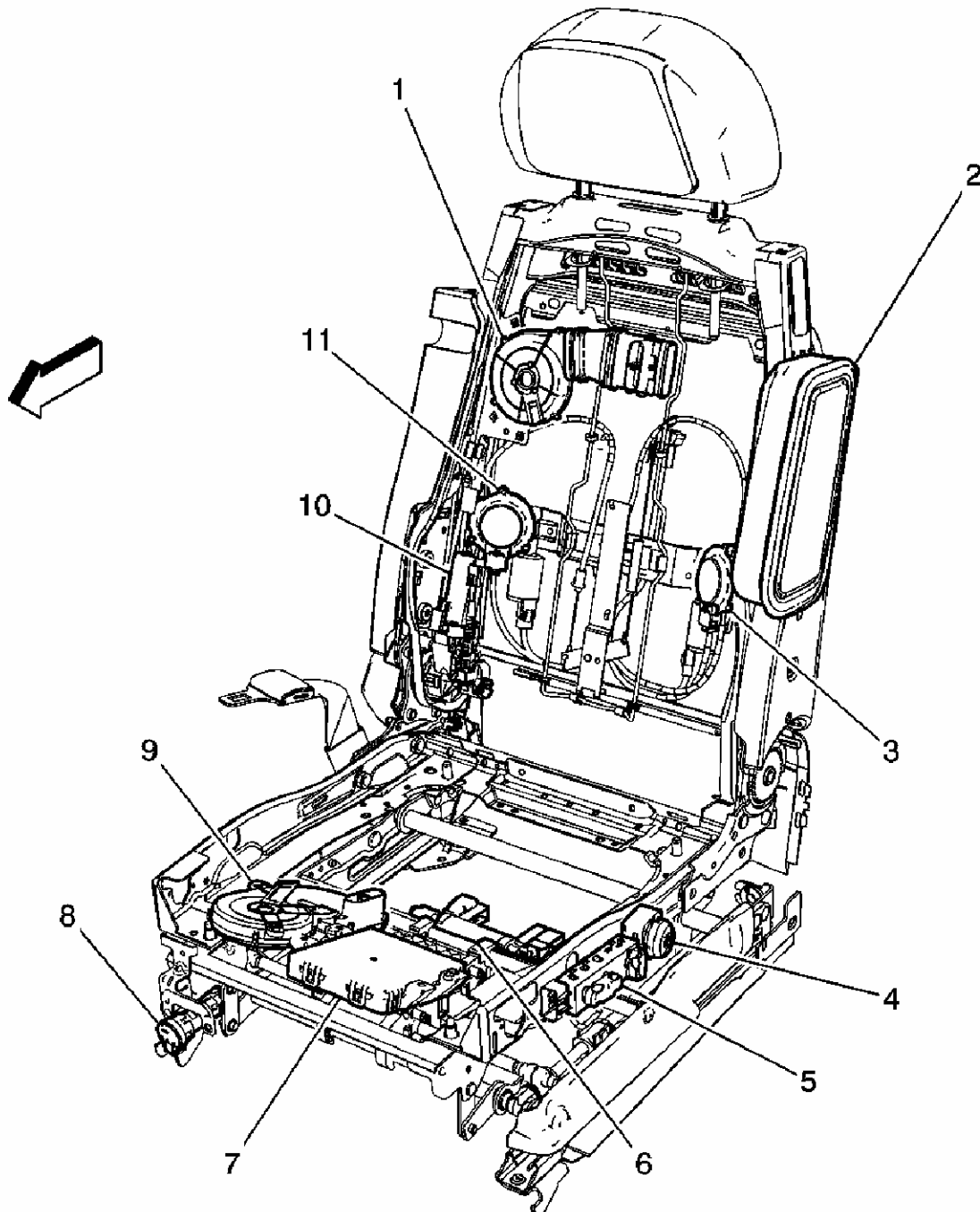
### Callouts For Fig. 11

Callout	Component Name
1	Inflatable Restraint Side Impact Module - Right

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2	Inflatable Restraint Passenger Presence System (PPS) Module
3	Inflatable Restraint Seat Position Sensor (SPS) - Right
4	Seat Adjuster Motor Assembly - Front Passenger (AH8)
5	Seat Adjuster Switch - Passenger (AG2, AH8)
6	Inflatable Restraint Passenger Presence System (PPS) Sensor



**Fig. 12: View Of Driver Seat (KB6)**

Courtesy of GENERAL MOTORS CORP.

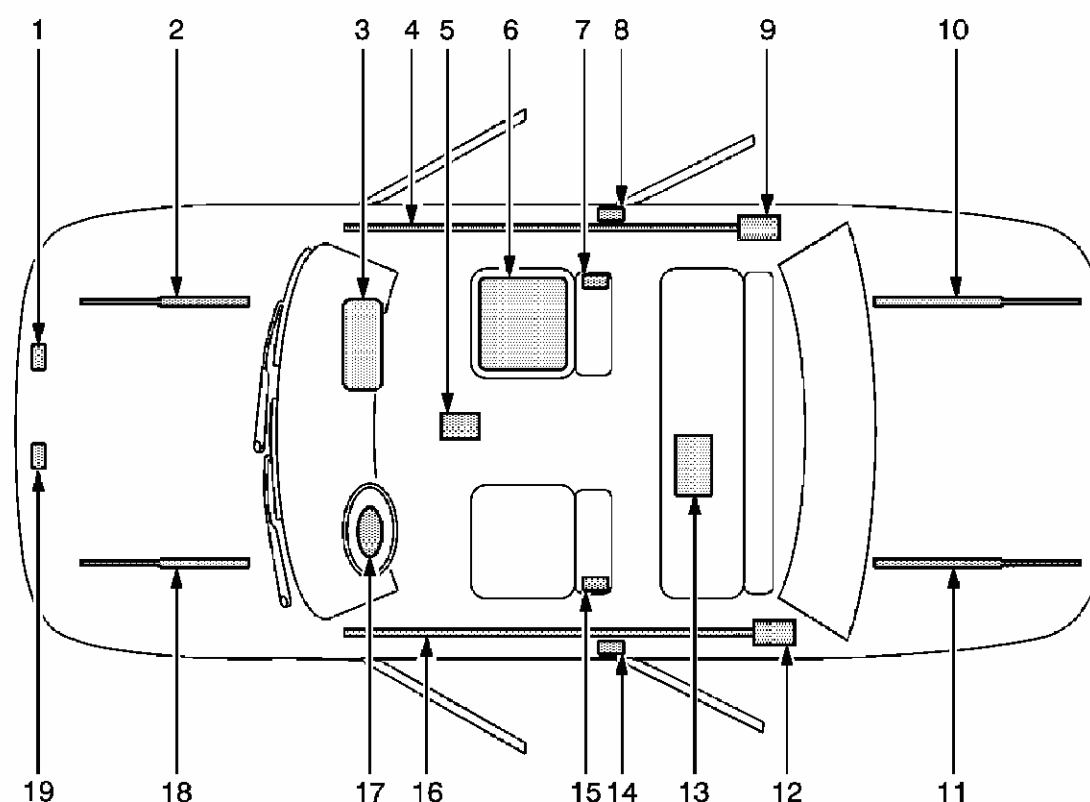


## Callouts For Fig. 12

Callout	Component Name
1	Seat Back Ventilation Heat and Cool Module - Driver (KB6)
2	Inflatable Restraint Side Impact Module - Left
3	Seat Lumbar Massage Motor - Driver (AM3)
4	Lumbar Adjuster Switch - Driver (AE8, A45)
5	Seat Adjuster Switch - Driver (AE8, A45)
6	Seat Adjuster Motor Assembly - Driver (AE8, A45)
7	Memory Seat Module (MSM)
8	Auxiliary Power Outlet
9	Seat Cushion Ventilation Heat and Cool Module - Driver (KB6)
10	Seat Recline Motor - Driver (AE8, A45)
11	Seat Lumbar Motor - Driver (AE8)

## SIR IDENTIFICATION VIEWS

The SIR Identification Views shown below illustrate the approximate location of all SIR components available for the vehicle. This will assist in determining the appropriate **SIR Disabling and Enabling** for a given service procedure.



**Fig. 13: Identifying Location Of SIR**

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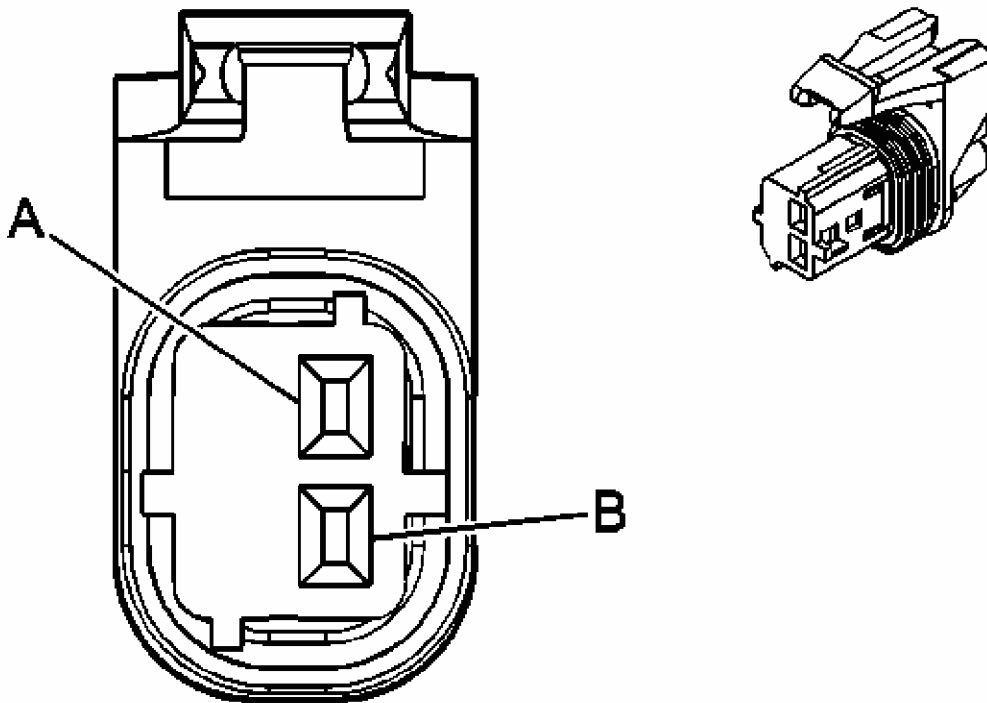
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**Courtesy of GENERAL MOTORS CORP.****Callouts For Fig. 13**

<b>Callout</b>	<b>Component Name</b>
1	Right Front End Sensor-Located on the front of the vehicle in the engine compartment
2	Front Hood Assist Rod-A gas shock located under the front hood on the passenger side
3	I/P Air Bag-Located at the top right under the instrument panel
4	Right Roof Rail Air Bag-Located under the headliner, extending from the passenger front windshield pillar to the passenger rear windshield pillar
5	Sensing and Diagnostic Module (SDM)-Located underneath the center console
6	Passenger Presence System (PPS)-Located on the passenger front seat underneath the seat bottom trim
7	RF Side Impact Air Bag-Located on the seat back of passenger seat
8	Right Seat Belt Retractor Pretensioner and Side Impact Sensor (SIS)-Located under the center pillar trim near the bottom on the passenger side
9	Inflator Module for Right Roof Rail Air Bag-Located near rear pillar on passenger side
10	Rear Compartment Lid Assist Rod-A gas shock is located under the rear trunk lid on the passenger side
11	Rear Compartment Lid Assist Rod-A gas shock is located under the rear trunk lid on the driver side
12	Inflator Module for Left Roof Rail Air Bag-Located near rear pillar on driver side
13	Vehicle Battery-Located under the rear seat bottom cushion
14	Left Seat Belt Retractor Pretensioner and Side Impact Sensor (SIS)-Located under the center pillar trim near the bottom on the driver side
15	LF Side Impact Air Bag-Located on the seat back of driver seat
16	Left Roof Rail Air Bag-Located under the headliner, extending from the driver front windshield pillar to the driver rear windshield pillar
17	Steering Wheel Air Bag-Located on the steering wheel
18	Front Hood Assist Rod-A gas shock located under the front hood on the driver side
19	Left Front End Sensor-Located on the front of the vehicle in the engine compartment

## SIR CONNECTOR END VIEWS

### Inflatable Restraint Front End Sensor - Left



**Fig. 14: Inflatable Restraint Front End Sensor Connector End View - Left**  
Courtesy of **GENERAL MOTORS CORP.**

## SIR Connector End Views

### Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Series Sealed 4.0 (YE)

### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

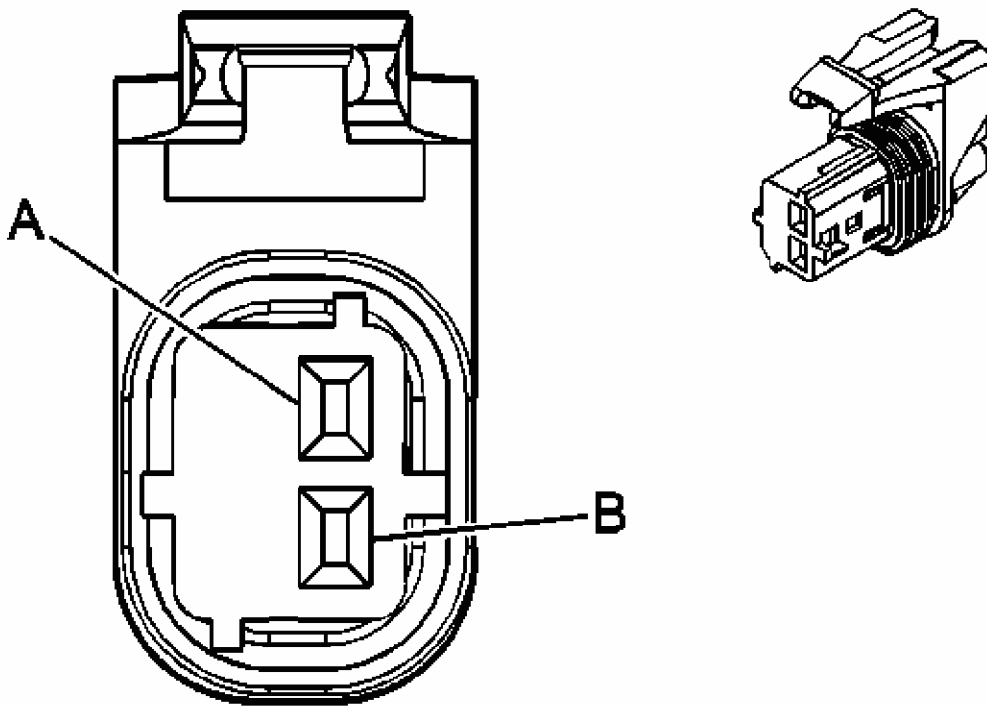
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### Inflatable Restraint Front End Sensor - Left

Pin	Wire Color	Circuit No.	Function
A	TN/OG	5045	Left Front Discriminating Low Reference
B	YE	1834	SIR Forward Sensor Signal

### Inflatable Restraint Front End Sensor - Right



**Fig. 15: Inflatable Restraint Front End Sensor Connector End View - Right**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Series Sealed 4.0 (YE)

#### Terminal Part Information

## 2006 Buick Lucerne CXS

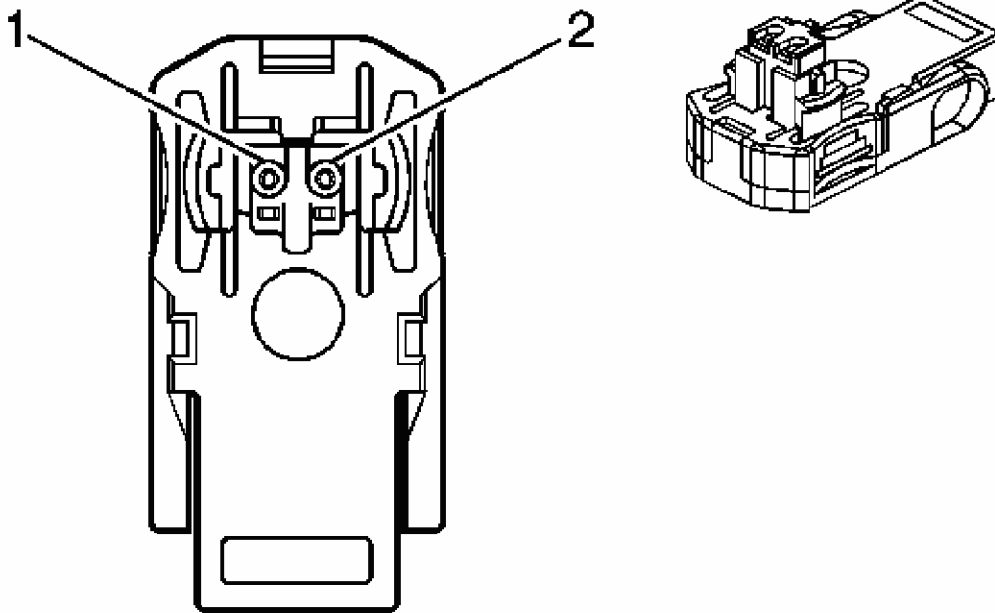
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- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

### Inflatable Restraint Front End Sensor - Right

Pin	Wire Color	Circuit No.	Function
A	D-GN	1409	Right Front Discriminating Sensor Signal
B	GY/RD	5600	Right Front Discriminating Low Reference

### Inflatable Restraint I/P Module C1



**Fig. 16: Inflatable Restraint I/P Module C1 Connector End View**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: 252922343
- Service: See Catalog

- Description: 2-Way F (YE)

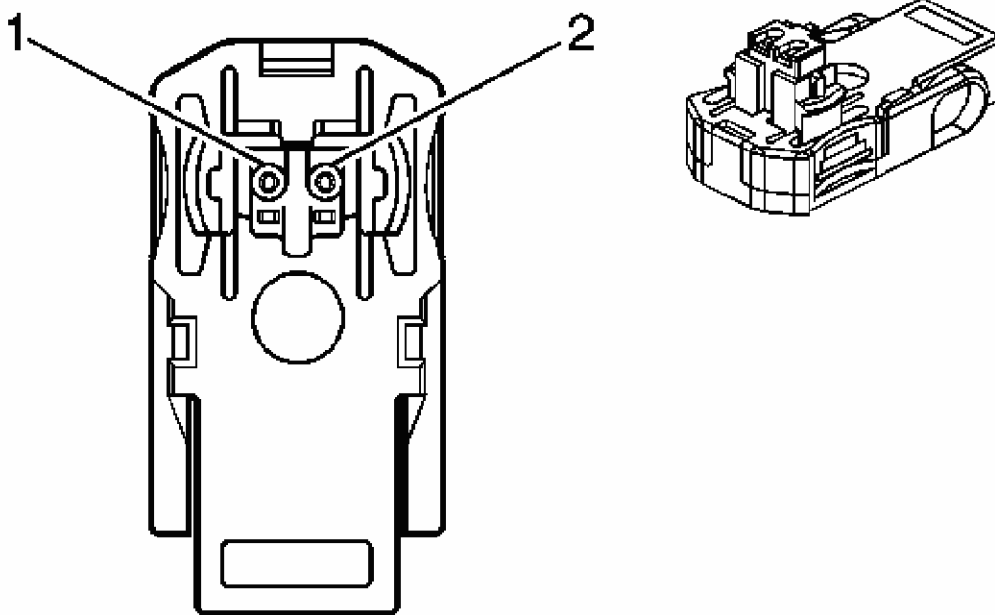
#### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

#### Inflatable Restraint I/P Module C1

Pin	Wire Color	Circuit No.	Function
1	YE	-	I/P Module - Stage 2 - High Control
2	OG	-	I/P Module - Stage 2 - Low Control

#### Inflatable Restraint I/P Module C2



**Fig. 17: Inflatable Restraint I/P Module C2 Connector End View**  
 Courtesy of GENERAL MOTORS CORP.

#### SIR Connector End Views

##### Connector Part Information

- OEM: 252922343

- Service: See Catalog
- Description: 2-Way F (YE)

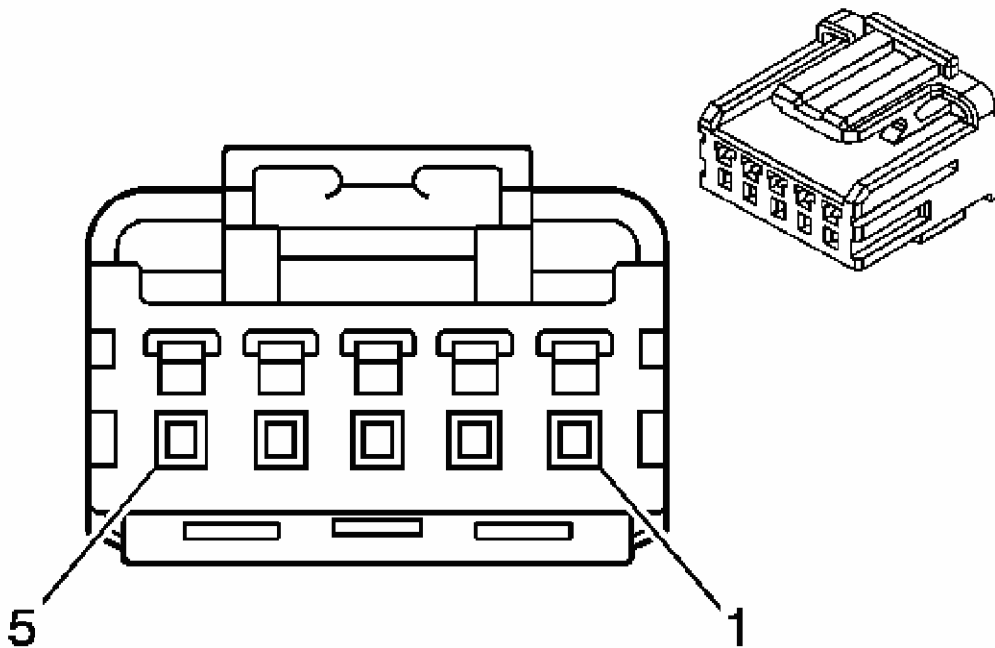
#### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

#### Inflatable Restraint I/P Module C2

Pin	Wire Color	Circuit No.	Function
1	PU	-	I/P Module - Stage 1 - High Control
2	GY	-	I/P Module - Stage 1 - Low Control

#### Inflatable Restraint I/P Module Indicator



**Fig. 18: Inflatable Restraint I/P Module Indicator Connector End View**  
 Courtesy of GENERAL MOTORS CORP.

#### SIR Connector End Views

##### Connector Part Information

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- OEM: HCMPB-05-S
- Service: 15398877
- Description: 5-Way F HCM 5P Female Housing Assembly (WH)

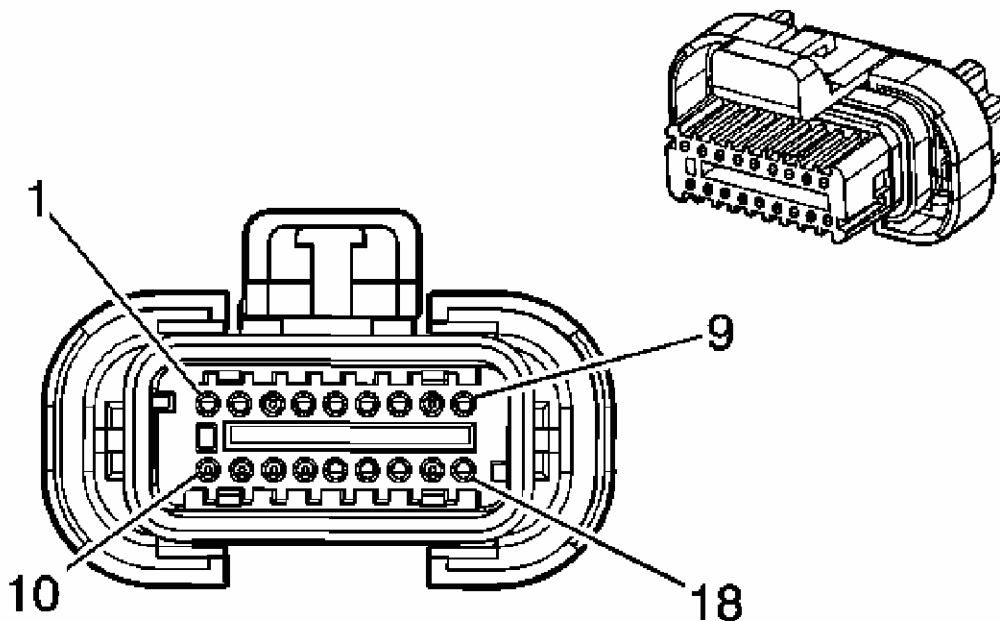
### Terminal Part Information

- Terminal/Tray: SHCM-A03T-P025/20
- Core/Insulation Crimp: J/J
- Release Tool/Test Probe: 12094429/J-35616-64B (L-BU)

### Inflatable Restraint I/P Module Indicator

Pin	Wire Color	Circuit No.	Function
1	D-BU	2307	Passenger Air Bag On Indicator Control
2	BK	850	Ground
3	PK/TN	2308	Passenger Air Bag Off Indicator Control
4	PK	239	Battery Positive Voltage
5	PU	5234	Passenger Seat Belt Indicator

### Inflatable Restraint Passenger Presence System (PPS) Module





**Fig. 19: Inflatable Restraint Passenger Presence System (PPS) Module Connector End View**Courtesy of **GENERAL MOTORS CORP.****SIR Connector End Views****Connector Part Information**

- OEM: 13510845
- Service: See Catalog
- Description: 18-Way F Micro-Pack 100W Sealed (BK)

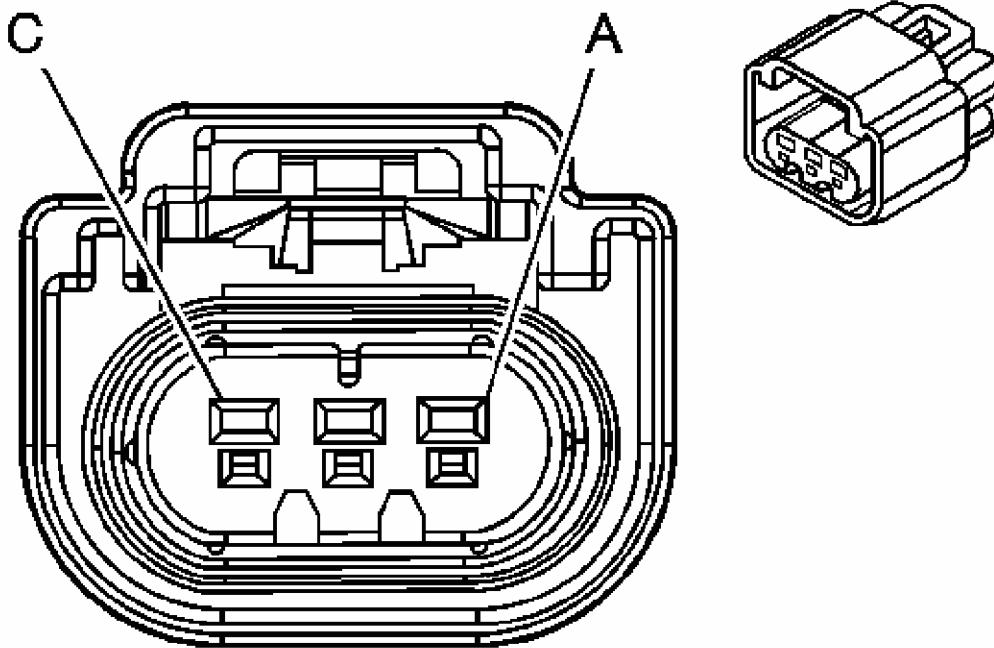
**Terminal Part Information**

- Pins: 1, 4, 5, 6, 7, 14, 15, 16, 17
- Terminal/Tray: 15435885/20
- Core/Insulation Crimp: W/W
- Release Tool/Test Probe: 12122523/J-35616-6 (BN)

**Inflatable Restraint Passenger Presence System (PPS) Module**

Pin	Wire Color	Circuit No.	Function
1	PK/RD	2440	Battery Positive Voltage
2-3	-	-	Not Used
4	PU	5611	Belt Tension Sensor Signal
5	BK	350	Ground
6	YE	5608	Pressure Sensor Signal
7	GY/D-GN	5609	Pressure Sensor Voltage Reference
8-13	-	-	Not Used
14	TN	5613	Belt Tension Sensor Low Reference
15	GY	5610	Pressure Sensor Low Reference
16	L-BU	5612	Belt Tension Sensor Voltage Reference
17	D-GN	5060	Low Speed GMLAN Serial Data
18	-	-	Not Used

**Inflatable Restraint Passenger Presence System (PPS) Sensor**



**Fig. 20: Inflatable Restraint Front Passenger Presence System (PPS) Sensor Connector End View**

Courtesy of GENERAL MOTORS CORP.

#### SIR Connector End Views

##### Connector Part Information

- OEM: 15422250
- Service: 88987995
- Description: 3-Way F GT 150 Series (GY)

##### Terminal Part Information

- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

#### Inflatable Restraint Passenger Presence System (PPS) Sensor

Pin	Wire Color	Circuit No.	Function
A	GY/D-GN	5609	Pressure Sensor Voltage Reference
B	YE	5608	Pressure Sensor Signal

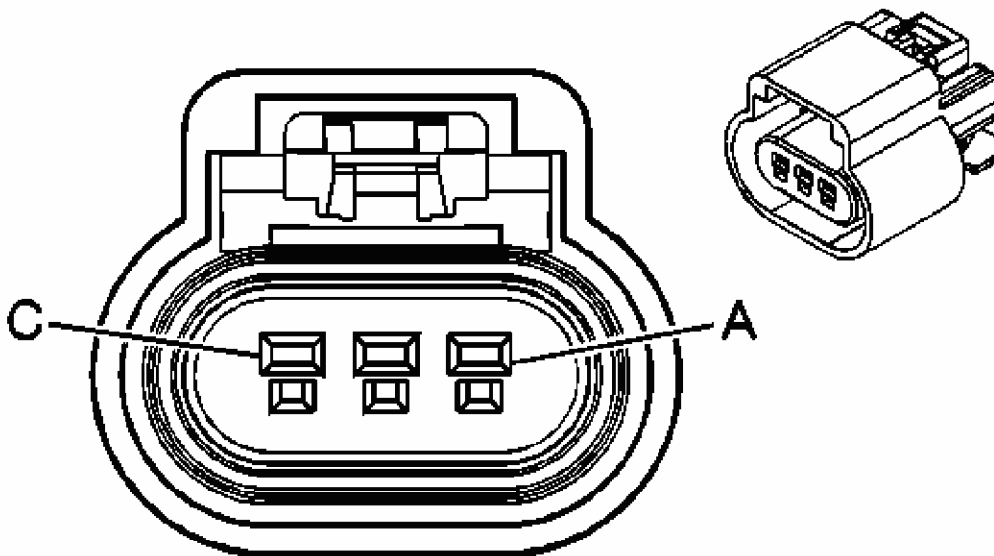
C

GY

5610

Pressure Sensor Low Reference

**Inflatable Restraint Passenger Seat Belt Tension Retractor Sensor**



**Fig. 21: Inflatable Restraint Passenger Seat Belt Tension Retractor Sensor Connector End View**

Courtesy of GENERAL MOTORS CORP.

**SIR Connector End Views**

**Connector Part Information**

- OEM: 15326808
- Service: See Catalog
- Description: 3-Way F GT 150 Series Sealed 4.5 (BK)

**Terminal Part Information**

- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

**Inflatable Restraint Passenger Seat Belt Tension Retractor Sensor**

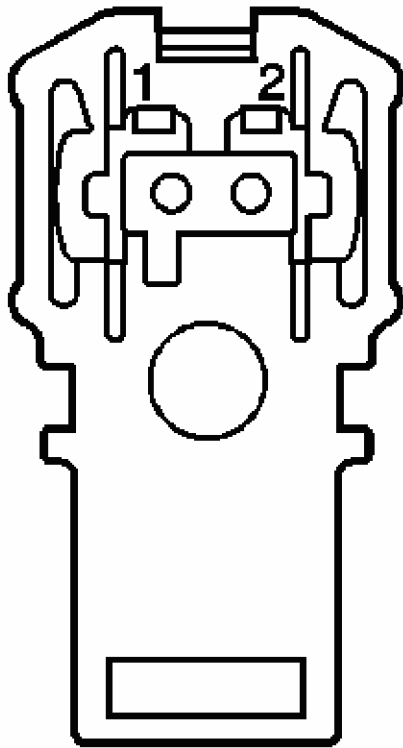
Pin	Wire Color	Circuit No.	Function

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A	L-BU	5612	Belt Tension Sensor Voltage Reference
B	TN	5613	Belt Tension Sensor Low Reference
C	PU	5611	Belt Tension Sensor Signal

### Inflatable Restraint Roof Rail Module - Left (AY0)



**Fig. 22: Inflatable Restraint Roof Rail Module - Left (AY0) Connector End View**  
Courtesy of **GENERAL MOTORS CORP.**

### SIR Connector End Views

#### Connector Part Information

- OEM: 252912048
- Service: See Catalog
- Description: 2-Way M 280 Series (GY)

#### Terminal Part Information

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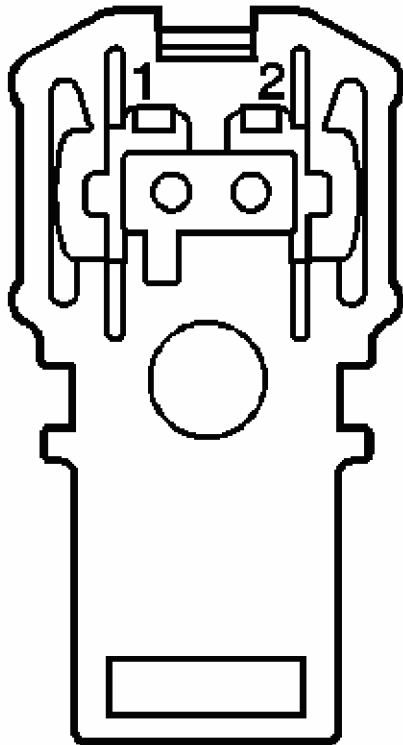
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- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

### Inflatable Restraint Roof Rail Module - Left (AY0)

Pin	Wire Color	Circuit No.	Function
1	L-GN/RD	-	Roof Rail Module - Left - High Control
2	PK/BK	-	Roof Rail Module - Left - Low Control

### Inflatable Restraint Roof Rail Module - Right (AY0)



**Fig. 23: Inflatable Restraint Roof Rail Module - Right (AY0) Connector End View**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

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### Connector Part Information

- OEM: 252912048
- Service: See Catalog
- Description: 2-Way M 280 Series (GY)

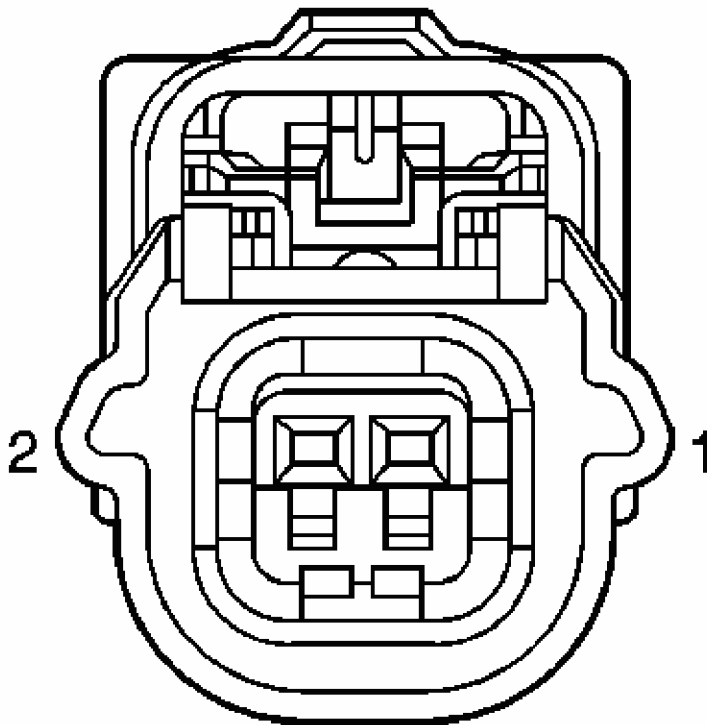
### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

### Inflatable Restraint Roof Rail Module - Right (AY0)

Pin	Wire Color	Circuit No.	Function
1	L-BU/RD	-	Roof Rail Module - Right - High Control
2	PK/BK	-	Roof Rail Module - Right - Low Control

### Inflatable Restraint Seat Position Sensor (SPS) - Right



**Fig. 24: Inflatable Restraint Seat Position Sensor (SPS) Connector End View - Right**  
Courtesy of GENERAL MOTORS CORP.

#### SIR Connector End Views

##### Connector Part Information

- OEM: 54390239
- Service: See Catalog
- Description: 2-Way F (BK)

##### Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

#### Inflatable Restraint Seat Position Sensor (SPS) - Right

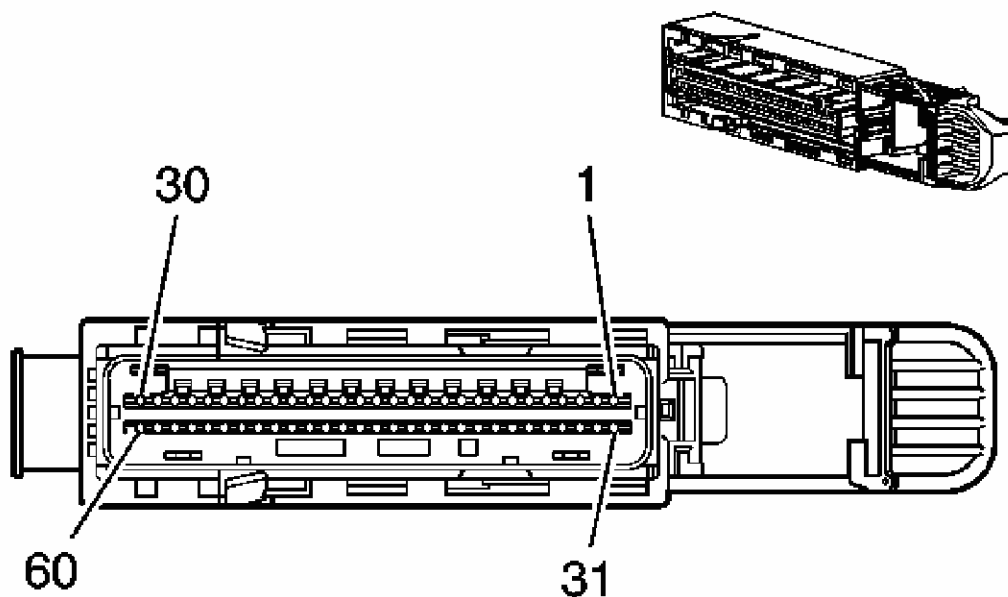
Pin	Wire Color	Circuit No.	Function
			Passenger Seat Position Switch

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1	L-BU	5056	Signal
2	TN/PK	5017	Low Reference

### Inflatable Restraint Sensing and Diagnostic Module (SDM)



**Fig. 25: Inflatable Restraint Sensing and Diagnostic Module (SDM) Connector End View**

Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: 5-638595-0
- Service: See Catalog
- Description: 60-Way F (YE)

#### Terminal Part Information

- Pins: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 28, 30, 31, 32, 36, 37, 38, 39, 40, 41, 42, 43, 59, 60
- Terminal/Tray: Service with Terminated Lead
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit



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**Inflatable Restraint Sensing and Diagnostic Module (SDM)**

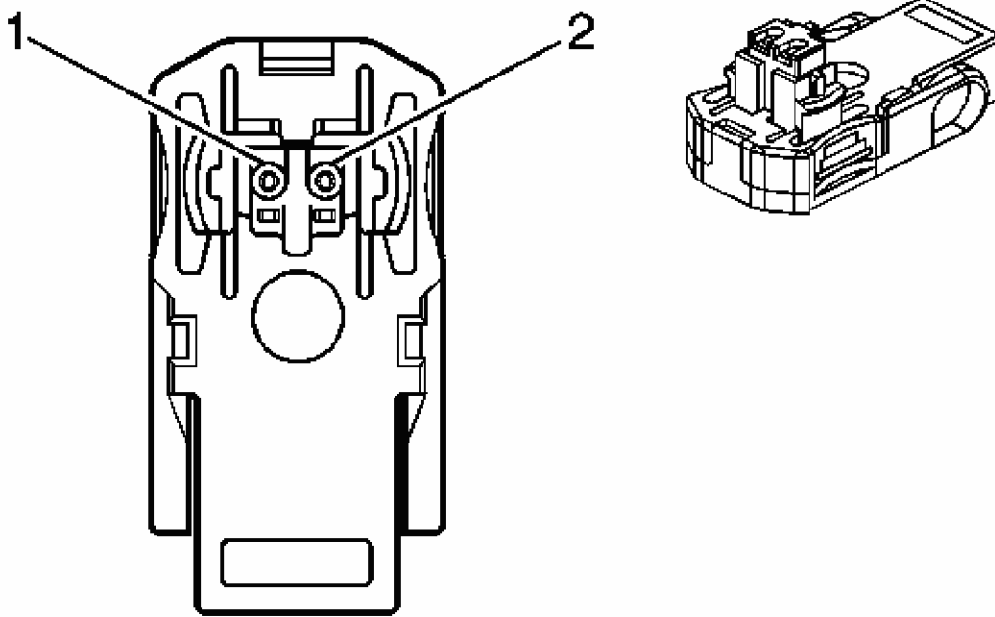
Pin	Wire Color	Circuit No.	Function
1	BK/WH	1751	Ground
2	D-GN	5060	Low Speed GMLAN Serial Data
3	D-GN	5060	Low Speed GMLAN Serial Data
4	GY/PK	3022	Steering Wheel Module - Stage 2 - Low Control
5	L-GN/WH	3023	Steering Wheel Module - Stage 2 - High Control
6	GY	3027	I/P Module - Stage 2 - High Control
7	PU	3026	I/P Module - Stage 2 - Low Control
8	BN	3020	Steering Wheel Module - Stage 1 - Low Control
9	TN/L-BU	3021	Steering Wheel Module - Stage 1 - High Control
10	WH/BK	1403	I/P Module - Stage 1 - High Control
11	D-GN/WH	1404	I/P Module - Stage 1 - Low Control
12	YE/GY	6969	Side Impact Module - Left - Low Control
13	L-BU/BK	6970	Side Impact Module - Left - High Control
14	L-GN	2116	Side Impact Module - RF - High Control
15	OG	2117	Side Impact Module - RF - Low Control
16	OG/BK	2119	Seat Belt Pretensioner - Left - Low Control
17	TN/BK	2118	Seat Belt Pretensioner - Left - High Control
18	TN/PU	7074	Seat Belt Pretensioner - RF - High Control
19	RD/L-BU	6971	Seat Belt Pretensioner - RF - Low Control
20	PK/BK	5020	Roof Rail Module - Left - Low Control
21	PU/WH	5019	Roof Rail Module - Left - High Control
22	YE/BK	5021	Roof Rail Module - Right - High Control
			Roof Rail Module - Right - Low

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23	L-BU/WH	5022	Control
24-27	-	-	Not Used
28	TN/PK	5017	Low Reference
29	-	-	Not Used
30	L-BU	5056	Passenger Seat Position Switch Signal
31	PK/RD	2440	Battery Positive Voltage
32	PK	239	Ignition 1 Voltage
33-35	-	-	Not Used
36	YE	1834	SIR Forward Sensor Signal
37	GY/RD	5600	Right Front Discriminating Low Reference
38	TN/OG	5045	Left Front Discriminating Low Reference
39	D-GN	1409	Right Front Discriminating Sensor Signal
40	WH	2132	Side Impact Sensor - Left - Signal
41	D-GN	2134	Side Impact Sensor - Right - Signal
42	YE/WH	2131	Side Impact Sensor - Left - Voltage
43	TN	2133	Side Impact Sensor - Right - Voltage
44-58	-	-	Not Used
59	TN/WH	238	Left Front Seat Belt Switch Signal
60	TN/WH	238	Right Front Seat Belt Switch Signal

**Inflatable Restraint Side Impact Module - Left**



**Fig. 26: Inflatable Restraint Side Impact Module Connector End View - Left**  
 Courtesy of GENERAL MOTORS CORP.

#### SIR Connector End Views

##### Connector Part Information

- OEM: 252922343
- Service: See Catalog
- Description: 2-Way F (YE)

##### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

#### Inflatable Restraint Side Impact Module - Left

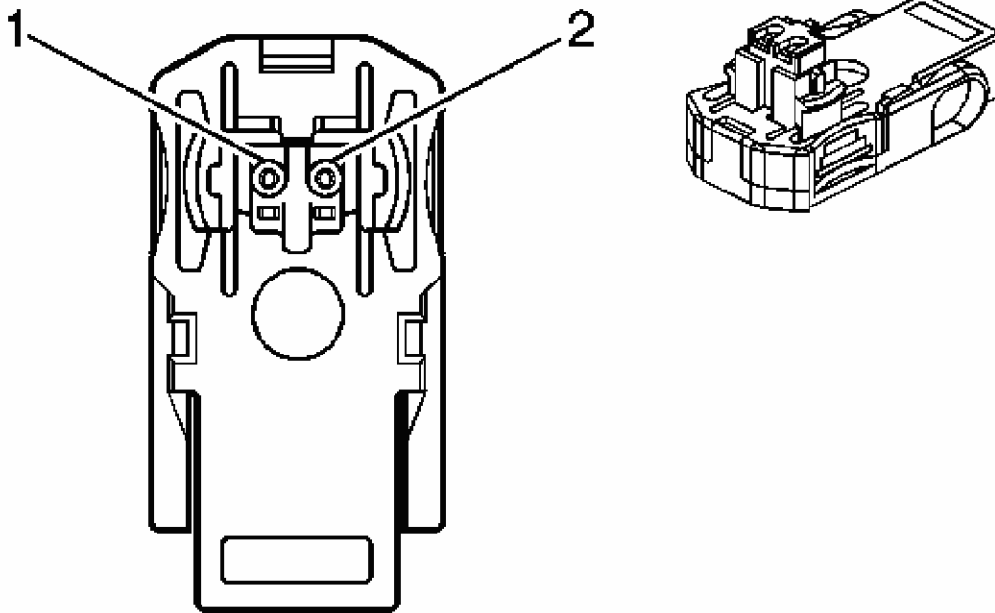
Pin	Wire Color	Circuit No.	Function
1	WH	6969	Side Impact Module - Left - Low Control
2	D-GN	6970	Side Impact Module - Left - High

## 2006 Buick Lucerne CXS

2006 RESTRAINTS SIR - Lucerne

Control

### Inflatable Restraint Side Impact Module - Right



**Fig. 27: Inflatable Restraint Side Impact Module Connector End View - Right**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: 252922343
- Service: See Catalog
- Description: 2-Way F (YE)

#### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

### Inflatable Restraint Side Impact Module - Right

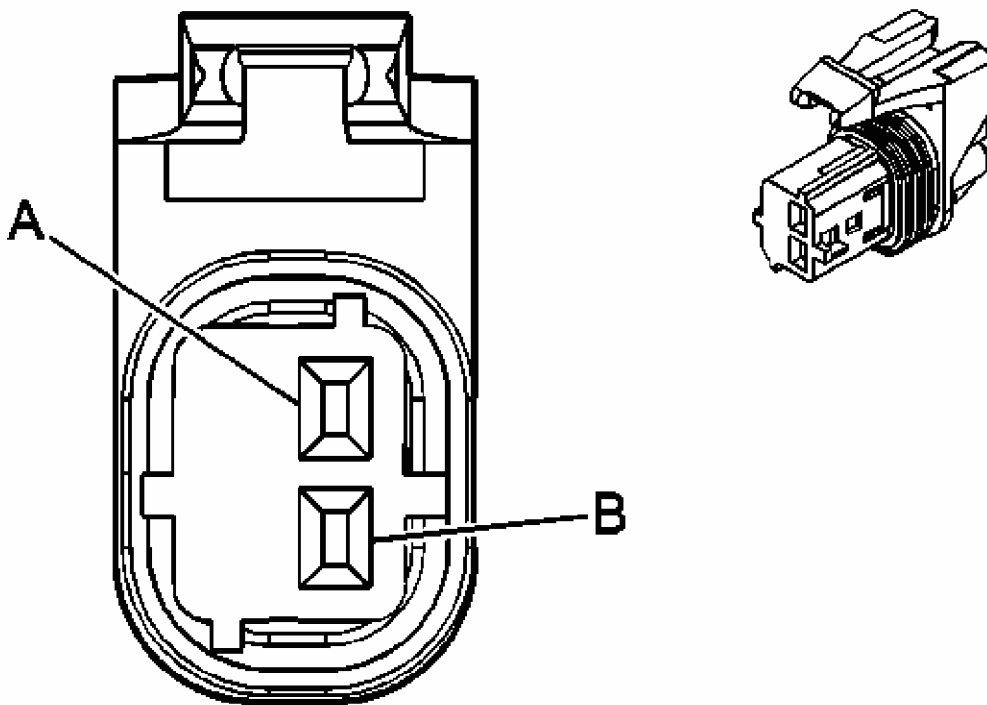
Pin	Wire Color	Circuit No.	Function
-----	------------	-------------	----------

## 2006 Buick Lucerne CXS

2006 RESTRAINTS SIR - Lucerne

1	WH	6969	Side Impact Module - RF - Low Control
2	D-GN	6970	Side Impact Module - RF - High Control

### Inflatable Restraint Side Impact Sensor - Left



**Fig. 28: Inflatable Restraint Side Impact Sensor Connector End View - Left**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Series Sealed 4.0 (YE)

#### Terminal Part Information

- Terminal/Tray: Service with Pigtail

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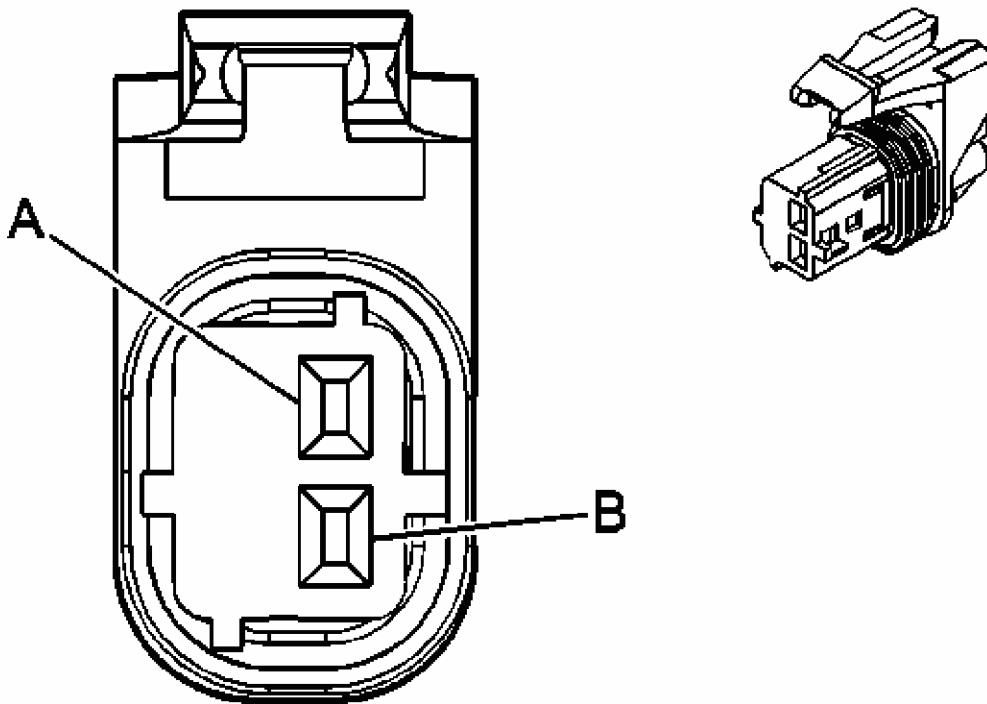
2006 RESTRAINTS SIR - Lucerne

- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

### Inflatable Restraint Side Impact Sensor - Left

Pin	Wire Color	Circuit No.	Function
A	WH	2132	Side Impact Sensor - Left - Signal
B	YE/WH	2131	Side Impact Sensor - Left - Voltage

### Inflatable Restraint Side Impact Sensor - Right



**Fig. 29: Inflatable Restraint Side Impact Sensor Connector End View - Right**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: 15356723
- Service: 15306439
- Description: 2-Way F GT 150 Series Sealed 4.0 (YE)

## 2006 Buick Lucerne CXS

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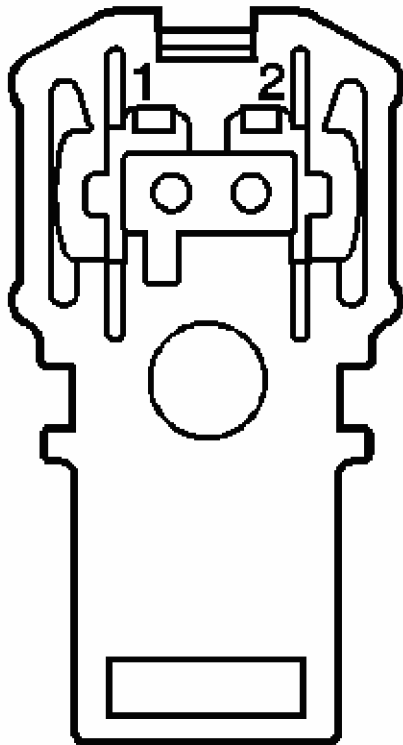
### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

### Inflatable Restraint Side Impact Sensor - Right

Pin	Wire Color	Circuit No.	Function
A	D-GN	2134	Side Impact Sensor - Right - Signal
B	TN	2133	Side Impact Sensor - Right - Voltage

### Inflatable Restraint Steering Wheel Module C1



**Fig. 30: Inflatable Restraint Steering Wheel Module C1 Connector End View**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

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- OEM: CA-252-92-4 R
- Service: See Catalog
- Description: 2-Way F AMP (GY/PK) With (YE) Case

### Terminal Part Information

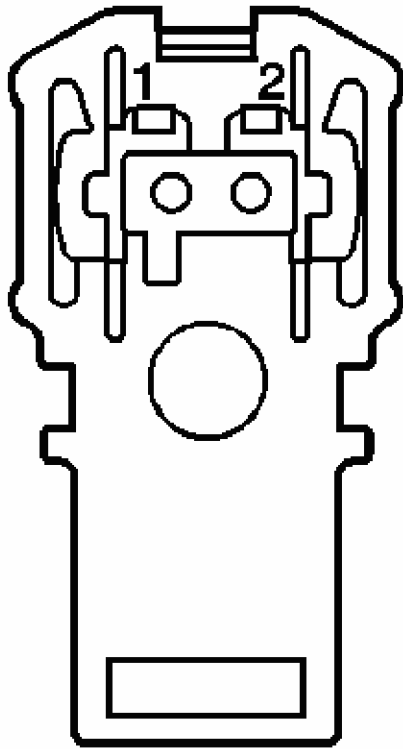
- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

### Inflatable Restraint Steering Wheel Module C1

Pin	Wire Color	Circuit No.	Function
1	TN	3021	Steering Wheel Module Stage 1 High Control
2	BN	3020	Steering Wheel Module Stage 1 Low Control

### Inflatable Restraint Steering Wheel Module C2





**Fig. 31: Inflatable Restraint Steering Wheel Module C2 Connector End View**  
 Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: CA-252-92-4 R
- Service: See Catalog
- Description: 2-Way F AMP (GY/PK) With (YE) Case

#### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

### Inflatable Restraint Steering Wheel Module C2

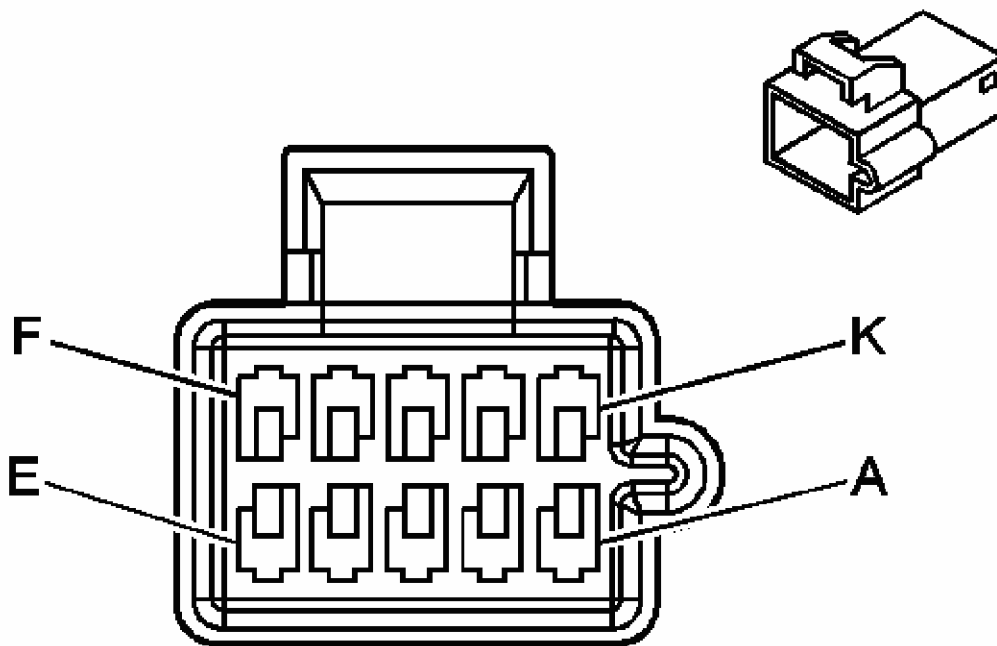
Pin	Wire Color	Circuit No.	Function

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1	TN	3021	Steering Wheel Module Stage 1 High Control
2	BN	3020	Steering Wheel Module Stage 1 Low Control

### Inflatable Restraint Steering Wheel Module Coil C1



**Fig. 32: Inflatable Restraint Steering Wheel Module Coil C1 Connector End View**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: 12064770
- Service: See Catalog
- Description: 10-Way M Metri-Pack 150 Series (NA)

#### Terminal Part Information

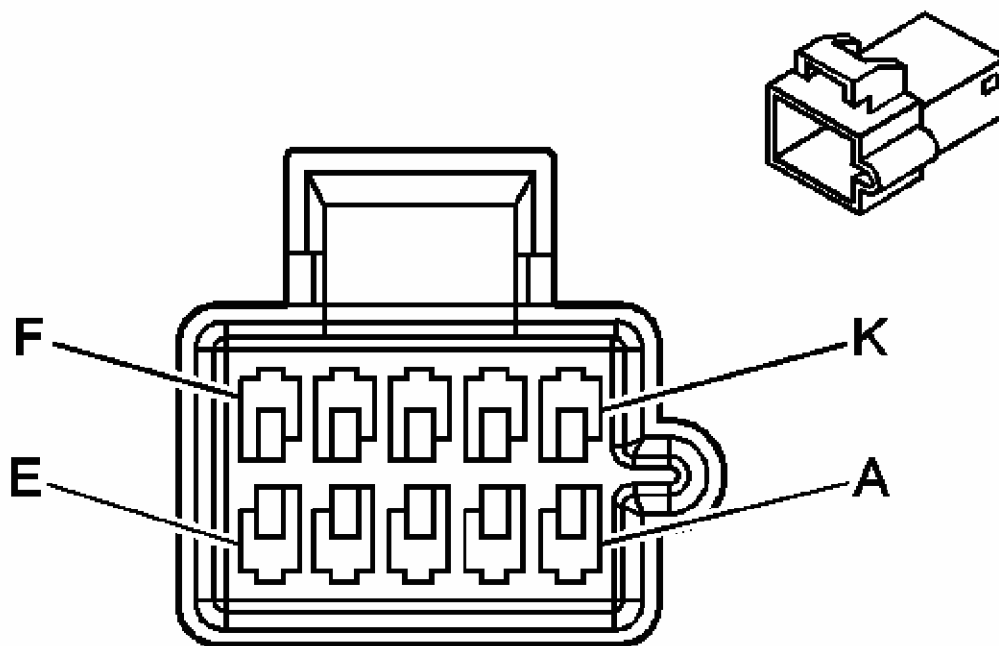
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

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**Inflatable Restraint Steering Wheel Module Coil C1**

Pin	Wire Color	Circuit No.	Function
A	-	-	Not Used
B	GY	1884	Cruise Control Set/Cruise And Resume/Accelerate Switch Signal
C-D	-	-	Not Used
E	PU	1375	Remote Radio Control Head Accessory Supply Voltage
F	GY/BK	1381	LCD Dimming Signal
G	D-BU	1796	Steering Column Radio Control Signal
H	BK	350	Ground
J	TN	28	Horn Relay Control
K	D-GN/WH	7158	Cruise Control Indicator Dimming Signal

**Inflatable Restraint Steering Wheel Module Coil C2**

**Fig. 33: Inflatable Restraint Steering Wheel Module Coil C2 Connector End View**  
Courtesy of GENERAL MOTORS CORP.

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2006 RESTRAINTS SIR - Lucerne

**SIR Connector End Views****Connector Part Information**

- OEM: 12064770
- Service: See Catalog
- Description: 10-Way M Metri-Pack 150 Series (NA)

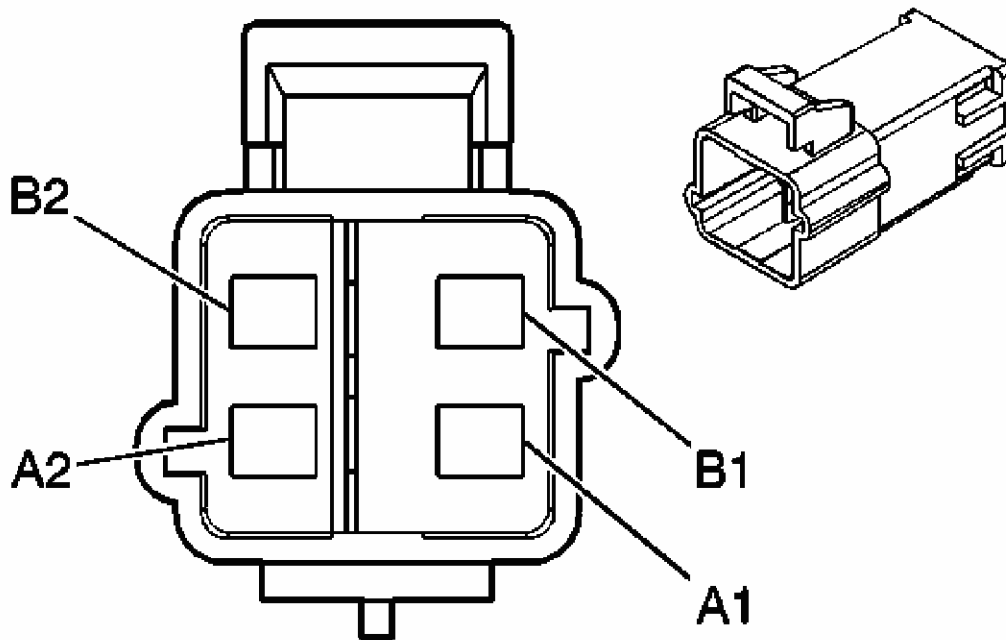
**Terminal Part Information**

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

**Inflatable Restraint Steering Wheel Module Coil C2**

Pin	Wire Color	Circuit No.	Function
A	-	-	Not Used
B	GY	1884	Cruise Control Set/Cruise And Resume/Accelerate Switch Signal
C-D	-	-	Not Used
E	PU	1375	Remote Radio Control Head Accessory Supply Voltage
F	PU/WH	1381	LCD Dimming Signal
G	D-BU	1796	Steering Column Radio Control Signal
H	BK	350	Ground
J	TN	28	Horn Relay Control
K	GN/WH	7158	Cruise Control Indicator Dimming Signal

**Inflatable Restraint Steering Wheel Module Coil C3**



**Fig. 34: Inflatable Restraint Steering Wheel Module Coil C3 Connector End View**  
 Courtesy of GENERAL MOTORS CORP.

#### SIR Connector End Views

##### Connector Part Information

- OEM: 15336476
- Service: 15306363
- Description: 4-Way M Metri-Pack 280 Series (YE)

##### Terminal Part Information

- Terminal/Tray: 12034047/2
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12094430/J-35616-5 (PU)

#### Inflatable Restraint Steering Wheel Module Coil C3

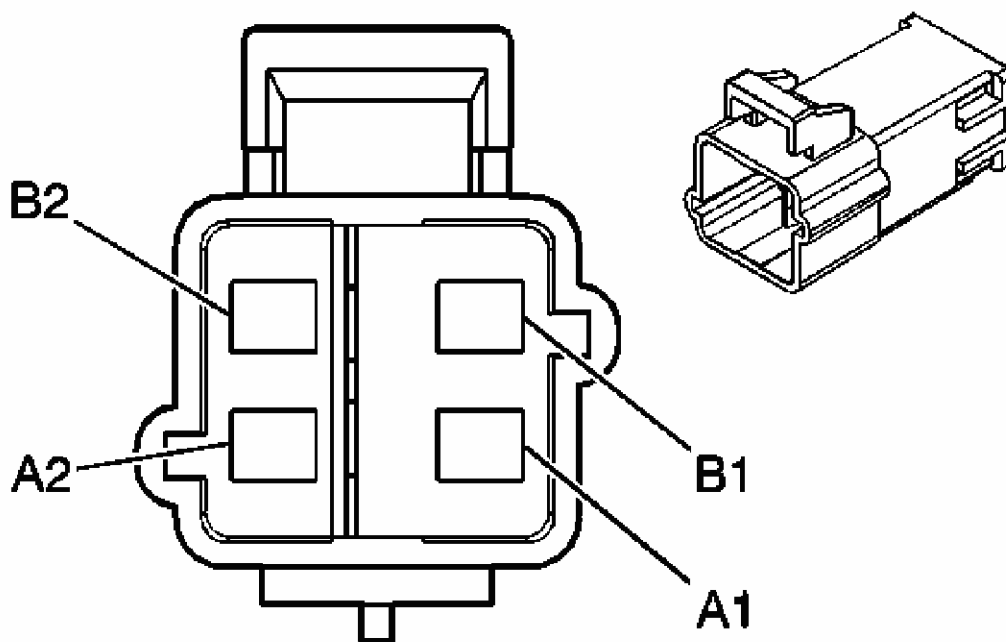
Pin	Wire Color	Circuit No.	Function
A1	TN	3021	Steering Wheel Module Stage 1 High Control
A2	BN	3020	Steering Wheel Module Stage 1 Low

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			Control
B1	WH	3023	Steering Wheel Module Stage 2 High Control
B2	PK	3022	Steering Wheel Module Stage 2 Low Control

### Inflatable Restraint Steering Wheel Module Coil C4



**Fig. 35: Inflatable Restraint Steering Wheel Module Coil C4 Connector End View**  
Courtesy of GENERAL MOTORS CORP.

### SIR Connector End Views

#### Connector Part Information

- OEM: 15336476
- Service: 15306363
- Description: 4-Way M Metri-Pack 280 Series (YE)

#### Terminal Part Information

- Terminal/Tray: 12034047/2
- Core/Insulation Crimp: E/A

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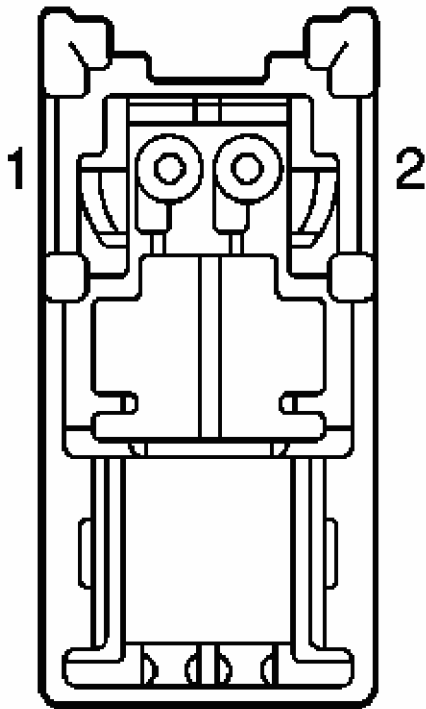
2006 RESTRAINTS SIR - Lucerne

- Release Tool/Test Probe: 12094430/J-35616-5 (PU)

### Inflatable Restraint Steering Wheel Module Coil C4

Pin	Wire Color	Circuit No.	Function
A1	TN	3021	Steering Wheel Module Stage 1 High Control
A2	BN	3020	Steering Wheel Module Stage 1 Low Control
B1	WH	3023	Steering Wheel Module Stage 2 High Control
B2	PK	3022	Steering Wheel Module Stage 2 Low Control

Seat Belt Pretensioner - LF



**Fig. 36: Seat Belt Pretensioner - LF Connector End View**  
Courtesy of GENERAL MOTORS CORP.

**SIR Connector End Views**

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### Connector Part Information

- OEM: 1376030-1
- Service: 88988308
- Description: 2-Way F (YE)

### Terminal Part Information

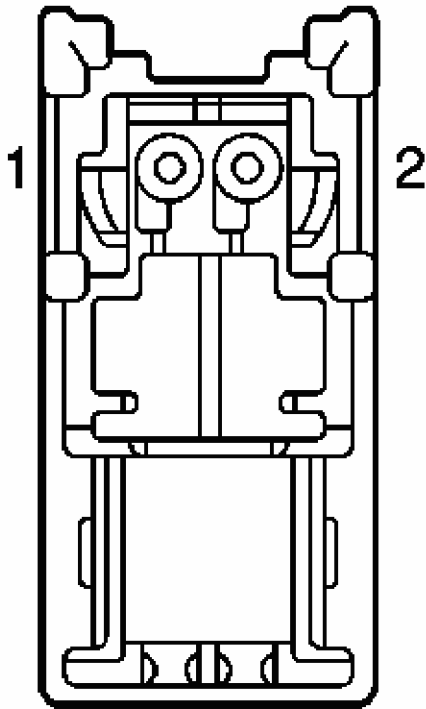
- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

### Seat Belt Pretensioner - LF

Pin	Wire Color	Circuit No.	Function
1	TN/BK	2118	Seat Belt Pretensioner - Left - High Control
2	OG/BK	2119	Seat Belt Pretensioner - Left - Low Control

### Seat Belt Pretensioner - RF





**Fig. 37: Seat Belt Pretensioner Connector End View - RF**  
 Courtesy of GENERAL MOTORS CORP.

#### SIR Connector End Views

##### Connector Part Information

- OEM: 1376030-1
- Service: 88988308
- Description: 2-Way F (YE)

##### Terminal Part Information

- Terminal/Tray: Service with Pigtail
- Core/Insulation Crimp: N/A
- Release Tool/Test Probe: See Terminal Repair Kit

#### Seat Belt Pretensioner - RF

Pin	Wire Color	Circuit No.	Function
			Seat Belt Pretensioner - RF- High

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1	TN/PU	7074	Control
2	RD/L-BU	6971	Seat Belt Pretensioner - RF- Low Control

**DIAGNOSTIC INFORMATION AND PROCEDURES****DIAGNOSTIC CODE INDEX****DIAGNOSTIC CODE INDEX**

<b>DTC</b>	<b>Description</b>
<b><u>DTC B0012 or B0013</u></b>	<b>** MULTIPLE VALUES **</b>
<b><u>DTC B0014</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0015</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0016</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0019 or B0020</u></b>	<b>** MULTIPLE VALUES **</b>
<b><u>DTC B0021</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0022</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0023</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0052 or B0053</u></b>	<b>** MULTIPLE VALUES **</b>
<b><u>DTC B0055</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0056</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0057</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0071</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0073</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0074</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0080</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0081</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B0083 or B0084</u></b>	<b>** MULTIPLE VALUES **</b>
<b><u>DTC B0085 or B0086</u></b>	<b>** MULTIPLE VALUES **</b>
<b><u>DTC B1001</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B1019</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>
<b><u>DTC B1370</u></b>	<b>**DESCRIPTION NOT COLLECTED **</b>

**DIAGNOSTIC STARTING POINT - SIR**

Begin the system diagnosis with the **Diagnostic System Check - Vehicle** . The Diagnostic System Check will provide the following information:

- The identification of the control module which commands the system
- The ability of the control module to communicate through the serial data circuit

- The identification of any stored diagnostic trouble codes (DTCs) and their status

The use of **Diagnostic System Check - Vehicle** will identify the correct procedure for diagnosing the system and where the procedure is located.

### SCAN TOOL DATA LIST

The SIR scan tool data list and PPS scan tool data list contain the restraint system related parameters that are available on the scan tool. The column, Data List, indicates the location of the parameter within the scan tool menu selections.

Use the SIR scan tool data list as directed by a diagnostic table or in order to supplement the diagnostic procedures. Begin all of the diagnostic procedures with the **Diagnostic System Check - Vehicle**. Use the Scan Tool Data Lists after the following is determined:

- A diagnostic directs the use of the Data List.
- There is no published diagnostic trouble code (DTC) procedure nor published symptom procedure for the customer concern.
- The DTC or symptom diagnostic procedure indicated by the diagnostic system check does not resolve the customer concern.

The typical data values are obtained from a properly operating vehicle under the conditions specified in the second row of the scan tool data list table. Comparison of the parameter values from the suspect vehicle with the typical data values may reveal the source of the customer concern.

### SIR Scan Tool Data List

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
<b>Operating Conditions: Ignition ON/Engine OFF/Driver Seat Belt Buckled/Passenger Seat Belt Unbuckled</b>			
Battery Voltage Signal	Data	Volts	Varies
Run/Crank	Data	Active/Inactive	Inactive
SIR Warning Indicator	Data	On/Off	Off
Driver Seat Belt Type	Sensor Data	Switch/Sensor	Switch
Psgr. Seat Belt Type	Sensor Data	Switch/Sensor	Sensor
Psgr. Seat Belt Sensor	Sensor Data	mA	Varies
Driver Seat Belt Switch	Sensor Data	Unbuckled/Buckled	Buckled
Passenger Seat Belt Switch	Sensor Data	Unbuckled/Buckled	Unbuckled
Driver Seat Position Sensor	Sensor Data	Forward/Rearward	Varies

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Psgr. Seat Position Sensor	Sensor Data	Forward/Rearward	Varies
Primary Key Status	Key Identification	Unknown/Valid/Invalid	Valid
SDM Primary Key	Key Identification	4-digit number	Varies
Received Primary Key	Key Identification	4-digit number	Varies
Secondary Key Status	Key Identification	Unknown/Valid/Invalid	Valid
Received VIN Digits 2-5	Key Identification	4-digit number	Varies
Received VIN Digits 6-7	Key Identification	2-digit number	Varies

**Passenger Presence System Scan Tool Data List**

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
<b>Operating Conditions: Ignition ON/Engine OFF/Driver Seat Belt Buckled/Passenger Seat Belt Unbuckled</b>			
Battery Voltage Signal	Data	Volts	Varies
Power Mode	Data	Off/Accessory/Run/Crank Request	Inactive
PPS Fault Status	Data	No Fault/Plant Mode/Fault/Mismatch	No Fault
SDM Enable Status	Data	Enabled/Disabled	Enabled
PPS Enable Status	Data	Enabled/Disabled	Disabled
Passenger Classification	Data	Unknown/Calibrating/Empty Seat/Small/Large/Re-Zero	Empty Seat
Passenger Status	Data	No Info./Valid/Invalid Class./Invalid Pos./Invalid Data/Inval. Class&Pos	Varies
Pressure Sensor	Data	Volts	Varies
Seat Belt Tension Sensor	Data	Volts	Varies
Primary Key Status	Key Identification	Unknown/Valid/Invalid	Valid
PPS Primary Key	Key Identification	4-digit number	Varies
Received Primary Key	Key Identification	4-digit number	Varies

**SCAN TOOL DATA DEFINITIONS**

The SIR scan tool data definitions and passenger presence system scan tool data definitions lists contain a brief description of all SIR related parameters available on the scan tool. The parameters that are available on the scan tool are listed below in alphabetical order.

**SIR****Battery Voltage Signal**

The scan tool displays 0-20 volts. This is the system voltage measured by the SDM between the battery input and ground.

**Driver Seat Belt Switch**

The scan tool displays whether the driver seat belt is buckled or unbuckled.

**Driver Seat Belt Type**

The scan tool displays whether the driver seat uses a switch or a sensor for the seat belt buckle.

**Driver Seat Position Sensor**

If the vehicle is equipped with a driver seat position sensor. The scan tool displays whether the driver seat is in the Forward or Rearward position to determine if the airbag should activate single or dual stage deployment as necessary.

**Passenger Seat Belt Switch**

The scan tool displays whether the passenger seat belt is buckled or unbuckled.

**Primary Key Status**

The scan tool displays the status of the primary key based on the comparison between the BCM and the SDM. If the Status is other than Valid the SDM will not allow activation and should set a DTC.

**Psgr. Seat Belt Sensor**

The scan tool displays whether the passenger seat belt is buckled or unbuckled.

**Psgr. Seat Belt Type**

The scan tool displays whether the passenger seat uses a switch or a sensor for the seat

belt buckle.

**Psgr. Seat Position Sensor**

If the vehicle is equipped with a passenger seat position sensor. The scan tool displays whether the passenger seat is in the Forward or Rearward position to determine if the airbag should activate single or dual stage deployment as necessary.

**Received Primary Key**

The scan tool displays what the SDM received from the BCM as the primary key. The SDM then compares it to what it has stored to determine the Primary Key Status. The SDM Primary Key and Received Primary Key should match.

**Received VIN Digits 2-5**

The scan tool displays the Secondary Key which includes digits 2 through 5 of the VIN that the BCM sends to the SDM.

**Received VIN Digits 6-7**

The scan tool displays the Secondary Key which includes digits 6 and 7 of the VIN that the BCM sends to the SDM.

**Run/Crank**

The scan tool displays the current power mode of the SDM.

**SDM Primary Key**

The scan tool displays primary key that the SDM has stored to memory.

**Secondary Key Status**

The scan tool displays whether the Secondary Key is valid or invalid. This determines if the VIN stored in SDM memory matches what is stored in the BCM.

**SIR Warning Indicator**

The scan tool displays whether the SIR warning indicator has been requested ON or OFF.

**Passenger Presence System****Battery Voltage Signal**

The scan tool displays 0-20 volts. This is the system voltage measured by the PPS module between the battery input and ground.

**Power Mode**

The scan tool displays the current power mode.

**PPS Fault Status**

The scan tool displays the current condition of the PPS system to determine if the SDM or PPS is causing the PPS Disabled condition.

**SDM Enable Status**

The scan tool displays the current status of the PPS system within the SDM. When disabled, SDM will default to deactivate the deployment loops related to the passenger airbags. PPS Fault Status and SDM Fault status should match.

**PPS Enable Status**

The scan tool displays the current status of the PPS system. This information is sent to the SDM for deactivation of the deployment loops related to the passenger airbags. PPS Enable Status and SDM Enable status should match.

**Passenger Classification**

The scan tool displays the calculated seat occupant status or need to re-zero.

**Passenger Status**

The scan tool displays the calculated seat occupant status including relationship to seat position.

**Pressure Sensor**

The scan tool displays the voltage determined by the weight/position of the seat occupant.

**Seat Belt Tension Sensor**

The scan tool displays voltage which is used to determine whether a child infant seat is mounted in the passenger seat or not.

**Primary Key Status**

The scan tool displays the status of the primary key based on the comparison between the SDM and the PPS. If the Status is other than Valid the PPS will not allow activation and should set a DTC.

### **PPS Primary Key**

The scan tool displays primary key that the PPS has stored to memory.

### **Received Primary Key**

The scan tool displays what the PPS received from the BCM as the primary key. The PPS then compares it to what it has stored to determine the Primary Key Status. The PPS Primary Key and Received Primary Key should match.

### **DTC B0012 OR B0013**

#### **Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

#### **DTC Descriptors**

### **DTC B0012 01**

Driver Frontal Deployment Loop Stage 1 Short to Battery

### **DTC B0012 02**

Driver Frontal Deployment Loop Stage 1 Short to Ground

### **DTC B0012 04**

Driver Frontal Deployment Loop Stage 1 Open Circuit

### **DTC B0012 0D**

Driver Frontal Deployment Loop Stage 1 Resistance Above Threshold

### **DTC B0012 0E**

Driver Frontal Deployment Loop Stage 1 Resistance Below Threshold



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**DTC B0013 01**

Driver Frontal Deployment Loop Stage 2 Short to Battery

**DTC B0013 02**

Driver Frontal Deployment Loop Stage 2 Short to Ground

**DTC B0013 04**

Driver Frontal Deployment Loop Stage 2 Open Circuit

**DTC B0013 0D**

Driver Frontal Deployment Loop Stage 2 Resistance Above Threshold

**DTC B0013 0E**

Driver Frontal Deployment Loop Stage 2 Resistance Below Threshold

**Diagnostic Fault Information****DTC B0012 or B0013**

<b>Circuit</b>	<b>Short to Ground</b>	<b>High Resistance</b>	<b>Open</b>	<b>Short to Voltage</b>	<b>Signal Performance</b>
Steering Wheel Module Stage 1 High Circuit	B0012 02	B0012 0D	B0012 04	B0012 01	B0012 0E
Steering Wheel Module Stage 1 Low Circuit	B0012 02	B0012 0D	B0012 04	B0012 01	B0012 0E
Steering Wheel Module Stage 2 High Circuit	B0013 02	B0013 0D	B0013 04	B0013 01	B0013 0E
Steering Wheel Module Stage 2 Low Circuit	B0013 02	B0013 0D	B0013 04	B0013 01	B0013 0E

**Circuit/System Description**

If a malfunction is detected, a DTC will be stored in non-volatile memory. During a frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the steering wheel module. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage.

There are 2 shorting bars used within each connector which will short together both steering wheel module stage 1 high circuit and steering wheel module stage 1 low circuit and both

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steering wheel module stage 2 high circuit and steering wheel module stage 2 low circuit when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing.

### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

### Conditions for Setting the DTC

#### B0012 01 Stage 1 or B0013 01 Stage 2

The steering wheel module high and/or low circuit is short to voltage for 120 milliseconds.

#### B0012 02 Stage 1 or B0013 02 Stage 2

The steering wheel module high and/or low circuit is short to ground for 120 milliseconds.

#### B0012 04 Stage 1 or B0013 04 Stage 2

The steering wheel module high and/or low circuit is open for 120 milliseconds.

#### B0012 0D Stage 1 or B0013 0D Stage 2

The steering wheel module deployment loop resistance is more than 5.1 ohms for 120 milliseconds.

#### B0012 0E Stage 1 or B0013 0E Stage 2

The steering wheel module deployment loop resistance is less than 1.3 ohms for 120 milliseconds.

### Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SDM will store a DTC, if an event occurs the system will still attempt deployments.

### Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 100 malfunction-free ignition cycles have occurred.

### Reference Information

### Schematic Reference

### SIR Schematics

**Connector End View Reference****SIR Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Special Tools Required**

**J 38715-A** SIR Driver/Passenger Load Tool. See **Special Tools**.

**Diagnostic Aids**

This DTC usually indicates a poor connection or a wiring malfunction between the SDM and the deployment loop.

**Circuit/System Testing**

**IMPORTANT:** When removing connectors inspect for damage, corrosion or poor connection. Damage or corrosion in the following requires repair or replacement of the affected component/connector.

- The pretensioner
  - The air bag module
  - The SDM module
  - The air bag wiring harness connector
  - The SDM wiring harness connector
1. Verify that the steering wheel module connector and the connector position assurance (CPA) are engaged.

**IMPORTANT:** The connector and CPA may seat independent of each other. Both the connector and CPA should seat with an audible and/or tactile click. The CPA isolates the shorting-bars within the connector allowing the deployment circuit to operate properly.

- If the above condition is found, make the appropriate repair.

2. Ignition OFF, disconnect the steering wheel module.
3. With the applicable adaptor, connect special tool **J 38715-A** . See **Special Tools**.
4. Ignition ON, with a scan tool, verify DTC is set as current.
  - If DTC is not set or is set as history, replace the steering wheel module.
5. Ignition OFF, disconnect special tool **J 38715-A** . See **Special Tools**.
6. Disconnect the steering wheel module coil in-line connector.
7. With the applicable adaptor, connect special tool **J 38715-A** . See **Special Tools**.
8. Ignition ON, with a scan tool, verify DTC is set as current.
  - If DTC is not set or is set as history, replace the steering wheel module coil.
9. Ignition OFF, disconnect special tool **J 38715-A** and the applicable adaptor. See **Special Tools**.
10. Disconnect the harness connector at the SDM.
11. Ignition ON, test for less than 1 volt between the applicable HI circuit and ground.
  - If not the specified range, test the circuit for a short to voltage.
12. Test for less than 1 volt between the applicable LOW circuit and ground.
  - If not the specified range, test the circuit for a short to voltage.
13. Ignition OFF, test for infinite resistance between the applicable HI circuit and ground.
  - If not the specified range, test the circuit for a short to ground.
14. Test for infinite resistance between the applicable LOW circuit and ground.
  - If not the specified range, test the circuit for a short to ground.
15. Test for less than 1 ohm of resistance between the SDM connector and the air bag module connector HI circuit.
  - If not the specified range, test the circuit for an open/high resistance.
16. Test for less than 1 ohm of resistance between the SDM connector and the air bag module connector LOW circuit.
  - If not the specified range, test the circuit for an open/high resistance.
17. If all circuits test normal, replace the SDM.

**Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Inflatable Restraint Steering Wheel Module Coil Replacement**
- **Inflatable Restraint Steering Wheel Module Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

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### DTC B0014

#### DTC Descriptors

#### DTC B0014 01

Left Front Side Deployment Loop Short to Battery

#### DTC B0014 02

Left Front Side Deployment Loop Short to Ground

#### DTC B0014 04

Left Front Side Deployment Loop Open Circuit

#### DTC B0014 0D

Left Front Side Deployment Loop Resistance Above Threshold

#### DTC B0014 0E

Left Front Side Deployment Loop Resistance Below Threshold

#### Diagnostic Fault Information

**IMPORTANT:** Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

### DTC B0014

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Side Impact Module - LF High Circuit	B0014 02	B0014 0D	B0014 04	B0014 01	B0014 0E
Side Impact Module - LF Low Circuit	B0014 02	B0014 0D	B0014 04	B0014 01	B0014 0E

#### Circuit/System Description

During a side or frontal crash of sufficient force, the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the side impact module - LF. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage.

A shorting bar used within the side impact module - LF connector which will short together

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both side impact module - LF high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing.

### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

### Conditions for Setting the DTC

#### B0014 01

The side impact module - LF high and/or low circuit is short to voltage for 120 milliseconds.

#### B0014 02

The side impact module - LF high and/or low circuit is short to ground for 120 milliseconds.

#### B0014 04

The side impact module - LF high and/or low circuit is open for 120 milliseconds.

#### B0014 0D

The side impact module - LF deployment loop resistance is more than 3.9 ohms for 120 milliseconds.

#### B0014 0E

The side impact module - LF deployment loop resistance is less than 1.1 ohms for 120 milliseconds.

### Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR system is disabled and no deployments are allowed.

### Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

### Reference Information

#### Schematic Reference

### SIR Schematics

**Connector End View Reference****SIR Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Special Tools Required**

- **J 38715-A** SIR Driver/Passenger Load Tool. See **Special Tools**.
- EL 38715-150 SIR Load Tool Adapter
- J 38715-30A SIR Load Tool Adapter

**Circuit/System Testing**

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- The side impact module - LF
  - The side impact module wiring harness
  - The SDM module
  - The side impact module - LF wiring harness connector
  - The side impact module wiring harness connector
  - The SDM wiring harness connector
1. Ignition OFF, disconnect the side impact module - LF wiring harness connector located under the driver front seat.
  2. Use EL 38715-150 adapter to connect the **J 38715-A** to the harness side of the side impact module - LF wiring harness connector. See **Special Tools**. Use the PASSENGER INFLATOR connector located on the load tool.
  3. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0014 is set history.
    - If DTC B0014 is current, turn OFF the ignition and remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement**

**(AG1/AG2) or Inflatable Restraint Sensing and Diagnostic Module Replacement (AM6)** in Repair Instructions for connector location.

- Test and repair both side impact module - LF high and low circuits for a short to voltage, short to ground or open/low resistance. If all circuits test normal, replace the SDM.
- 4. Ignition OFF, disconnect and remove the **J 38715-A** and adapter. See **Special Tools**. Then connect the side impact module - LF wiring harness connector. Remove the side impact module - LF connector. Use J 38715-30A adapter to connect the **J 38715-A** to the harness side of the side impact module - LF connector. See **Special Tools**. Use the PASSENGER INFLATOR connector located on the load tool.
- 5. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0014 is set history.
  - If DTC B0014 is current, replace the side impact module - LF wiring harness.
- 6. If DTC B0014 is history, replace the side impact module - LF.

#### Repair Procedures

**IMPORTANT: Always perform the Diagnostic Repair Verification after completing the diagnostic procedure.**

- **Inflatable Restraint Side Impact Module Replacement - Front**
- **Inflatable Restraint Side Impact Module Wiring Harness Replacement**
- **Control Module References** for SDM replacement, setup and programming

#### DTC B0015

##### DTC Descriptors

#### DTC B0015 01

Left Front Seat Belt Pretensioner Deployment Loop Short to Battery

#### DTC B0015 02

Left Front Seat Belt Pretensioner Deployment Loop Short to Ground

#### DTC B0015 04

Left Front Seat Belt Pretensioner Deployment Loop Open Circuit

#### DTC B0015 0D

Left Front Seat Belt Pretensioner Deployment Loop Resistance Above Threshold



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**DTC B0015 0E**

Left Front Seat Belt Pretensioner Deployment Loop Resistance Below Threshold

**Diagnostic Fault Information**

**IMPORTANT:** Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

**DTC B0015**

<b>Circuit</b>	<b>Short to Ground</b>	<b>High Resistance</b>	<b>Open</b>	<b>Short to Voltage</b>	<b>Signal Performance</b>
Seat Belt Pretensioner - LF High Circuit	B0015 02	B0015 0D	B0015 04	B0015 01	B0015 0E
Seat Belt Pretensioner - LF Low Circuit	B0015 02	B0015 0D	B0015 04	B0015 01	B0015 0E

**Circuit/System Description**

During a side or frontal crash of sufficient force, the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the seat belt pretensioner - LF. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. A shorting bar used within the seat belt pretensioner - LF connector which will short together both seat belt pretensioner - LF high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC****B0015 01**

The seat belt pretensioner - LF high and/or low circuit is short to voltage for 120 milliseconds.

**B0015 02**

The seat belt pretensioner - LF high and/or low circuit is short to ground for 120 milliseconds.

**B0015 04**

The seat belt pretensioner - LF high and/or low circuit is open for 120 milliseconds.

**B0015 0D**

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The seat belt pretensioner - LF deployment loop resistance is more than 3.9 ohms for 120 milliseconds.

### B0015 0E

The seat belt pretensioner - LF deployment loop resistance is less than 1.1 ohms for 120 milliseconds.

#### Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR system is disabled and no deployments are allowed.

#### Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

#### Reference Information

##### Schematic Reference

### SIR Schematics

##### Connector End View Reference

### SIR Connector End Views

#### Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

#### Special Tools Required

- **J 38715-A** SIR Driver/Passenger Load Tool. See Special Tools.
- J 38715-30A SIR Load Tool Adapter

#### Circuit/System Testing

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires

**repair or replacement of the affected component/connector:**

- The seat belt retractor pretensioner - LF
- The SDM module
- The seat belt retractor pretensioner - LF wiring harness connector
- The SDM wiring harness connector

1. Ignition OFF, remove the lower center pillar trim and disconnect the seat belt retractor pretensioner - LF connector. Refer to **Center Pillar Lower Garnish Molding Replacement**.
2. Use J 38715-30A adapter to connect the **J 38715-A** to the harness side of the seat belt retractor pretensioner - LF wiring harness connector. See **Special Tools**. Use the PASSENGER INFLATOR connector located on the load tool.
3. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0015 is set current.
  - If DTC B0015 is history, replace the seat belt retractor pretensioner - LF.
4. Ignition OFF, disconnect and remove both the **J 38715-A** and adapter. See **Special Tools**. Then remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement (AG1/AG2)** or **Inflatable Restraint Sensing and Diagnostic Module Replacement (AM6)** in Repair Instructions for connector location.
5. Test the high and low circuits between the SDM and seat belt retractor pretensioner - LF for a short to voltage, short to ground, an open or low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
  - If any of the above conditions are found, make the appropriate repair.
6. If all circuits test normal, replace the SDM.

**Repair Procedures**

**IMPORTANT:** Always perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Seat Belt Retractor Pretensioner Replacement - Front**
- **Control Module References** for SDM replacement, setup and programming

**DTC B0016**

**DTC Descriptors**

**DTC B0016 01**

Left Roof Rail Deployment Loop Short to Battery

### DTC B0016 02

Left Roof Rail Deployment Loop Short to Ground

### DTC B0016 04

Left Roof Rail Deployment Loop Open Circuit

### DTC B0016 0D

Left Roof Rail Deployment Loop Resistance Above Threshold

### DTC B0016 0E

Left Roof Rail Deployment Loop Resistance Below Threshold

#### Diagnostic Fault Information

**IMPORTANT:** Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

### DTC B0016

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Roof Rail Module - Left High Circuit	B0016 02	B0016 0D	B0016 04	B0016 01	B0016 0E
Roof Rail Module - Left Low Circuit	B0016 02	B0016 0D	B0016 04	B0016 01	B0016 0E

#### Circuit/System Description

During a side or frontal crash of sufficient force the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the roof rail module. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage.

A shorting bar used within the roof rail module connector which will short together both roof rail module - left high and low circuits when the connector is disconnected, this will help to prevent unwanted deployment of the inflator module during servicing.

#### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

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#### Conditions for Setting the DTC

##### B0016 01

The roof rail module - left high and/or low circuit is short to voltage for 120 milliseconds.

##### B0016 02

The roof rail module - left high and/or low circuit is short to ground for 120 milliseconds.

##### B0016 04

The roof rail module - left high and/or low circuit is open for 120 milliseconds.

##### B0016 0D

The roof rail module - left deployment loop resistance is more than 3.9 ohms for 120 milliseconds.

##### B0016 0E

The roof rail module - left deployment loop resistance is less than 1.1 ohms for 120 milliseconds.

#### Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR system is disabled and no deployments are allowed.

#### Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

#### Reference Information

##### Schematic Reference

#### SIR Schematics

##### Connector End View Reference

#### SIR Connector End Views

#### Electrical Information Reference

- Circuit Testing

- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Special Tools Required**

**J 38715-A** SIR Driver/Passenger Load Tool. See **Special Tools**.

**Circuit/System Testing**

**IMPORTANT:** When removing connectors inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector.

- The roof rail module - left
  - The SDM module
  - The roof rail module - left wiring harness connector
  - The SDM wiring harness connector
1. Ignition OFF, remove the left rear trim and disconnect the roof rail module - left connector. Refer to **Rear Quarter Upper Trim Panel Replacement**.
  2. Connect the **J 38715-A** to the harness side of the roof rail module - left connector. See **Special Tools**. Use the PASSENGER INFLATOR connector located on the load tool.
  3. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0016 is set in history.
    - If DTC B0016 is history replace the roof rail module - left.
  4. Ignition OFF, disconnect and remove the **J 38715-A**. See **Special Tools**. Then remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement (AG1/AG2)** or **Inflatable Restraint Sensing and Diagnostic Module Replacement (AM6)** in Repair Instructions for connector location.
  5. Test the high and low circuits between the SDM and roof rail module - left for a short to voltage, short to ground or open/low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
    - If any of the above conditions are found make the appropriate repair.
  6. If circuits test good then replace the SDM.

**Repair Procedures**

**IMPORTANT:** Always perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Roof Side Rail Inflatable Restraint Module Replacement**
- **Control Module References** for SDM replacement, setup and programming

**DTC B0019 OR B0020**

**DTC Descriptors**

**DTC B0019 01**

Passenger Frontal Deployment Loop Stage 1 Short to Battery

**DTC B0019 02**

Passenger Frontal Deployment Loop Stage 1 Short to Ground

**DTC B0019 04**

Passenger Frontal Deployment Loop Stage 1 Open Circuit

**DTC B0019 0D**

Passenger Frontal Deployment Loop Stage 1 Resistance Above Threshold

**DTC B0019 0E**

Passenger Frontal Deployment Loop Stage 1 Resistance Below Threshold

**DTC B0020 01**

Passenger Frontal Deployment Loop Stage 2 Short to Battery

**DTC B0020 02**

Passenger Frontal Deployment Loop Stage 2 Short to Ground

**DTC B0020 04**

Passenger Frontal Deployment Loop Stage 2 Open Circuit

**DTC B0020 0D**

Passenger Frontal Deployment Loop Stage 2 Resistance Above Threshold

**DTC B0020 0E**

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### Passenger Frontal Deployment Loop Stage 2 Resistance Below Threshold

#### Diagnostic Fault Information

**IMPORTANT:** Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

#### DTC B0019 or B0020

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
I/P Module Stage 1 High Circuit	B0019 02	B0019 0D	B0019 04	B0019 01	B0019 0E
I/P Module Stage 1 Low Circuit	B0019 02	B0019 0D	B0019 04	B0019 01	B0019 0E
I/P Module Stage 2 High Circuit	B0020 02	B0020 0D	B0020 04	B0020 01	B0020 0E
I/P Module Stage 2 Low Circuit	B0020 02	B0020 0D	B0020 04	B0020 01	B0020 0E

#### Circuit/System Description

If a malfunction is detected, a DTC will be stored in non-volatile memory. During a side or frontal crash of sufficient force, the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the instrument panel (I/P) module. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. There are 2 shorting bars used within the I/P module connector which will short together both I/P module stage 1 high and low circuits and both I/P module stage 2 high and low circuits, when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing.

#### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

#### Conditions for Setting the DTC

##### B0019 01 Stage 1 or B0020 01 Stage 2

The I/P module high and/or low circuit is short to voltage for 120 milliseconds.

##### B0019 02 Stage 1 or B0020 02 Stage 2

The I/P module high and/or low circuit is short to ground for 120 milliseconds.



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#### **B0019 04 Stage 1 or B0020 04 Stage 2**

The I/P module high and/or low circuit is open for 120 milliseconds.

#### **B0019 0D Stage 1 or B0020 0D Stage 2**

The I/P module deployment loop resistance is more than 5.1 ohms for 120 milliseconds.

#### **B0019 0E Stage 1 or B0020 0E Stage 2**

The I/P module deployment loop resistance is less than 1.3 ohms for 120 milliseconds.

#### **Action Taken When the DTC Sets**

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR System is disabled and no deployments are allowed.

#### **Conditions for Clearing the DTC**

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

#### **Reference Information**

#### **Schematic Reference**

### **SIR Schematics**

#### **Connector End View Reference**

### **SIR Connector End Views**

#### **Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

#### **Special Tools Required**

- **J 38715-A** SIR Driver/Passenger Load tool. See **Special Tools**.
- **J 38715-80** Driver/Passenger Load Tool Adapter

#### **Circuit/System Testing**

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- The I/P module
- The SDM module
- The I/P module wiring harness connector
- The SDM wiring harness connector

1. Ignition OFF, remove the left I/P lower trim cover and disconnect the I/P module in-line connector. Refer to **Instrument Panel Insulator Panel Replacement - Left Side**.
2. Use the J 38715-80 adapter to connect the **J 38715-A** to the harness side of the I/P module in-line wiring harness connector. See **Special Tools**. Use the PASSENGER INFLATOR and BASE of COLUMN connectors located on the load tool.
3. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0019 or B0020 are set current.
  - If DTC B0019 or B0020 is history, replace the I/P module.
4. Ignition OFF, disconnect and remove the **J 38715-A** and adapter. See **Special Tools**. Then remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement (AG1/AG2)** or **Inflatable Restraint Sensing and Diagnostic Module Replacement (AM6)** in Repair Instructions for connector location.
5. Test the high and low circuits between the SDM and I/P module for a short to voltage, short to ground or open/low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
  - If any of the above conditions are found, make the appropriate repair.
6. If all circuits test normal, replace the SDM.

#### Repair Procedures

**IMPORTANT:** Always perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Inflatable Restraint Instrument Panel Module Replacement**
- **Control Module References** for SDM replacement, setup and programming

#### DTC B0021

#### DTC Descriptors

#### DTC B0021 01

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Right Front Side Deployment Loop Short to Battery

### DTC B0021 02

Right Front Side Deployment Loop Short to Ground

### DTC B0021 04

Right Front Side Deployment Loop Open Circuit

### DTC B0021 0D

Right Front Side Deployment Loop Resistance Above Threshold

### DTC B0021 0E

Right Front Side Deployment Loop Resistance Below Threshold

#### Diagnostic Fault Information

**IMPORTANT: Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.**

### DTC B0021

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Side Impact Module - RF High Circuit	B0021 02	B0021 0D	B0021 04	B0021 01	B0021 0E
Side Impact Module - RF Low Circuit	B0021 02	B0021 0D	B0021 04	B0021 01	B0021 0E

#### Circuit/System Description

During a side or frontal crash of sufficient force, the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the side impact module - RF. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage.

A shorting bar used within the side impact module - RF connector which will short together both side impact module - RF high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing.

#### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

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#### Conditions for Setting the DTC

##### B0021 01

The side impact module - RF high and/or low circuit is short to voltage for 120 milliseconds.

##### B0021 02

The side impact module - RF high and/or low circuit is short to ground for 120 milliseconds.

##### B0021 04

The side impact module - RF high and/or low circuit is open for 120 milliseconds.

##### B0021 0D

The side impact module - RF deployment loop resistance is more than 3.9 ohms for 120 milliseconds.

##### B0021 0E

The side impact module - RF deployment loop resistance is less than 1.1 ohms for 120 milliseconds.

#### Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR system is disabled and no deployments are allowed.

#### Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

#### Reference Information

##### Schematic Reference

### SIR Schematics

##### Connector End View Reference

### SIR Connector End Views

#### Electrical Information Reference

- Circuit Testing

- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Special Tools Required**

- **J 38715-A** SIR Driver/Passenger Load Tool. See **Special Tools**.
- EL 38715-150 SIR Load Tool Adapter
- J 38715-30A SIR Load Tool Adapter

**Circuit/System Testing**

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- The side impact module - RF
  - The side impact module wiring harness
  - The SDM module
  - The side impact module - RF wiring harness connector
  - The side impact module wiring harness connector
  - The SDM wiring harness connector
1. Ignition OFF, disconnect the side impact module - RF wiring harness connector located under the driver front seat.
  2. Use the EL 38715-150 adapter to connect the **J 38715-A** to the harness side of the side impact module - RF wiring harness connector. See **Special Tools**. Use the PASSENGER INFLATOR connector located on the load tool.
  3. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0021 is set history.
    - If DTC B0021 is current, turn OFF the ignition and remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement (AG1/AG2)** or **Inflatable Restraint Sensing and Diagnostic Module Replacement (AM6)** in Repair Instructions for connector location.
    - Test and repair both side impact module - RF high and low circuits for a short to voltage, short to ground or open/low resistance. If all circuits test normal, replace the SDM.
  4. Ignition OFF, disconnect and remove the **J 38715-A** and adapter. See **Special Tools**.

Then connect the side impact module - RF wiring harness connector. Remove the side impact module - RF connector. Use the J 38715-30A adapter to connect the **J 38715-A** to the harness side of the side impact module - RF connector. See **Special Tools**. Use the PASSENGER INFLATOR connector located on the load tool.

5. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0021 is set history.
  - o If DTC B0021 is current, replace the side impact module - RF wiring harness.
6. If DTC B0021 is history, replace the side impact module - RF.

#### Repair Procedures

**IMPORTANT:** Always perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Inflatable Restraint Side Impact Module Replacement - Front
- Inflatable Restraint Side Impact Module Wiring Harness Replacement
- Control Module References for SDM replacement, setup and programming

#### DTC B0022

##### DTC Descriptors

#### DTC B0022 01

Right Front Seat Belt Pretensioner Deployment Loop Short to Battery

#### DTC B0022 02

Right Front Seat Belt Pretensioner Deployment Loop Short to Ground

#### DTC B0022 04

Right Front Seat Belt Pretensioner Deployment Loop Open Circuit

#### DTC B0022 0D

Right Front Seat Belt Pretensioner Deployment Loop Resistance Above Threshold

#### DTC B0022 0E

Right Front Seat Belt Pretensioner Deployment Loop Resistance Below Threshold

#### Diagnostic Fault Information

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**IMPORTANT:** Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

**DTC B0022**

<b>Circuit</b>	<b>Short to Ground</b>	<b>High Resistance</b>	<b>Open</b>	<b>Short to Voltage</b>	<b>Signal Performance</b>
Seat Belt Pretensioner - RF High Circuit	B0022 02	B0022 0D	B0022 04	B0022 01	B0022 0E
Seat Belt Pretensioner - RF Low Circuit	B0022 02	B0022 0D	B0022 04	B0022 01	B0022 0E

**Circuit/System Description**

During a side or frontal crash of sufficient force, the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the seat belt pretensioner - RF. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. A shorting bar used within the seat belt pretensioner - RF connector which will short together both seat belt pretensioner - RF high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC****B0022 01**

The seat belt pretensioner - RF high and/or low circuit is short to voltage for 120 milliseconds.

**B0022 02**

The seat belt pretensioner - RF high and/or low circuit is short to ground for 120 milliseconds.

**B0022 04**

The seat belt pretensioner - RF high and/or low circuit is open for 120 milliseconds.

**B0022 0D**

The seat belt pretensioner - RF deployment loop resistance is more than 3.9 ohms for 120 milliseconds.

**B0022 0E**

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The seat belt pretensioner - RF deployment loop resistance is less than 1.1 ohms for 120 milliseconds.

### Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR System is disabled and no deployments are allowed.

### Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

### Reference Information

#### Schematic Reference

### SIR Schematics

#### Connector End View Reference

### SIR Connector End Views

#### Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

#### Special Tools Required

- **J 38715-A** SIR Driver/Passenger Load Tool. See Special Tools.
- J 38715-30A SIR Load Tool Adapter

#### Circuit/System Testing

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- The seat belt retractor pretensioner - RF
- The SDM module



- **The seat belt retractor pretensioner - RF wiring harness connector**
- **The SDM wiring harness connector**

1. Ignition OFF, remove the lower center pillar trim and disconnect the seat belt retractor pretensioner - RF connector. Refer to **Center Pillar Lower Garnish Molding Replacement**.
2. Use the J 38715-30A adapter to connect the **J 38715-A** to the harness side of the seat belt retractor pretensioner - RF wiring harness connector. See **Special Tools**. Use the PASSENGER INFLATOR connector located on the load tool.
3. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0022 is set current.
  - If DTC B0022 is history, replace the seat belt retractor pretensioner - RF.
4. Ignition OFF, disconnect and remove both the **J 38715-A** and adapter. See **Special Tools**. Then remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement (AG1/AG2)** or **Inflatable Restraint Sensing and Diagnostic Module Replacement (AM6)** in Repair Instructions for connector location.
5. Test the high and low circuits between the SDM and seat belt retractor pretensioner - RF for a short to voltage, short to ground or open/low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
  - If any of the above conditions are found, make the appropriate repair.
6. If all circuits test normal, replace the SDM.

#### Repair Procedures

**IMPORTANT:** Always perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Seat Belt Retractor Pretensioner Replacement - Front**
- **Control Module References** for SDM replacement, setup and programming

#### DTC B0023

##### DTC Descriptor

#### DTC B0023 01

Right Roof Rail Deployment Loop Short to Battery

#### DTC B0023 02

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Right Roof Rail Deployment Loop Short to Ground

### DTC B0023 04

Right Roof Rail Deployment Loop Open Circuit

### DTC B0023 0D

Right Roof Rail Deployment Loop Resistance Above Threshold

### DTC B0023 0E

Right Roof Rail Deployment Loop Resistance Below Threshold

#### Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

### DTC B0023

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Roof Rail Module - Right High Circuit	B0023 02	B0023 0D	B0023 04	B0023 01	B0023 0E
Roof Rail Module - Right Low Circuit	B0023 02	B0023 0D	B0023 04	B0023 01	B0023 0E

#### Circuit/System Description

During a side or frontal crash of sufficient force, the inflatable restraint sensing and diagnostic module (SDM) will allow current to flow through the deployment loop in order to deploy the roof side rail module. The SDM performs continuous diagnostic tests on the deployment loops to check for proper circuit continuity and for shorts to ground or voltage. A shorting bar used within the roof rail module connector will short together both roof rail module - right high and low circuits when the connector is disconnected. This will help to prevent unwanted deployment of the inflator module during servicing.

#### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

#### Conditions for Setting the DTC

#### B0023 01

The roof rail module - right high and/or low circuit is short to voltage for 120 milliseconds.

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#### B0023 02

The roof rail module - right high and/or low circuit is short to ground for 120 milliseconds.

#### B0023 04

The roof rail module - right high and/or low circuit is open for 120 milliseconds.

#### B0023 0D

The roof rail module - right deployment loop resistance is more than 3.9 ohms for 120 milliseconds.

#### B0023 0E

The roof rail module - right deployment loop resistance is less than 1.1 ohms for 120 milliseconds.

#### Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR System is disabled and no deployments are allowed.

#### Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

#### Reference Information

#### Schematic Reference

#### SIR Schematics

#### Connector End View Reference

#### SIR Connector End Views

#### Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

#### Special Tools Required

**J 38715-A** SIR Driver/Passenger Load Tool. See **Special Tools**.

#### Circuit/System Testing

**IMPORTANT:** When removing connectors inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector.

- The roof rail module - right
  - The SDM module
  - The roof rail module - right wiring harness connector
  - The SDM wiring harness connector
1. Ignition OFF, remove the right rear trim and disconnect the roof rail module - right connector. Refer to **Rear Quarter Upper Trim Panel Replacement** .
  2. Connect the **J 38715-A** to the harness side of the roof rail module - right connector. See **Special Tools**. Use the PASSENGER INFLATOR connector located on the load tool.
  3. Ignition ON, use a scan tool to observe the SIR DTC display. Verify DTC B0023 is set in history.
    - If DTC B0023 is history replace the roof rail module - right.
  4. Ignition OFF, disconnect and remove the **J 38715-A** . See **Special Tools**. Then remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement (AG1/AG2)** or **Inflatable Restraint Sensing and Diagnostic Module Replacement (AM6)** in Repair Instructions for connector location.
  5. Test the high and low circuits between the SDM and roof rail module - right for a short to voltage, short to ground or open/low resistance.
    - If any of the above conditions are found make the appropriate repair.
  6. If all circuits test normal then replace the SDM.

#### Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Roof Side Rail Inflatable Restraint Module Replacement**
- **Control Module References** for SDM replacement, setup and programming

**DTC B0052 OR B0053**

#### Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic

procedure.

- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

#### DTC Descriptors

#### **DTC B0052**

Deployment Commanded

#### **DTC B0053**

Deployment Commanded with Loop DTCs Present

#### Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) contains a sensing device that converts vehicle velocity changes into an electrical signal. The SDM compares this electrical signal to a value stored in memory. When the generated signal exceeds the stored value, the SDM performs additional signal processing and compares the generated signals to values stored in memory. When 2 of the generated signals exceed the stored values, the SDM will cause current to flow through the deployment loops, deploying the air bags and/or pretensioners causing DTC B0052 or B0053 to set.

#### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

#### Conditions for Setting the DTC

##### **B0052**

- The SDM detects a frontal impact of sufficient force to warrant deployment of the frontal modules.
- The SDM detects a side impact of sufficient force to warrant deployment of a side impact module and/or roof rail module.
- The SDM has deployed the seat belt pretensioner.

##### **B0053**

SDM commands inflators deployment with loop faults present.

#### Action Taken When the DTC Sets

- The SDM will only set DTC B0052 or the SDM sets DTC B0053 along with DTC B0052.

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- The SDM commands the AIR BAG warning lamp ON via serial data communications.
- The SDM records crash data.

#### **Conditions for Clearing the DTC**

After an air bag deployment or 3 separate pretensioner deployments the DTC becomes latched and cannot be cleared.

#### **Diagnostic Aids**

**IMPORTANT:** The seat belt pretensioners may deploy for impacts that are not severe enough to warrant frontal or side air bag deployment. The SDM is capable of sustaining 3 pretensioner deployment events or one frontal or side deployment event. After the maximum number of deployments has occurred, DTC B0052 sets and becomes a latched code, which cannot be cleared.

When DTC B0053 is accompanied by additional DTCs, other than B0052, repair the malfunction causing the other DTCs before replacing SDM.

#### **Reference Information**

##### **Schematic Reference**

##### **SIR Schematics**

##### **Connector End View Reference**

##### **SIR Connector End Views**

##### **Description and Operation**

##### **SIR System Description and Operation**

##### **Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

##### **Scan Tool Reference**

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

**Circuit/System Verification**

1. Ignition OFF, verify no signs of inflator module or pretensioner deployment exist.
  - o If any signs of deployment exist, refer to **Repairs and Inspections Required After a Collision**.
2. With a scan tool, verify DTC B0052 or DTC B0053 is not set.
  - o If the DTC is set, clear DTCs. If DTC resets, replace the SDM.

**Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

**DTC B0055****Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

**DTC Descriptor****DTC B0055 00**

Side Airbag Deployment Commanded

**Circuit/System Description**

The inflatable restraint sensing and diagnostic module (SDM) contains a sensing device that converts vehicle velocity changes into an electrical signal. The SDM compares this electrical signal to a value stored in memory. When the generated signal exceeds the stored value, the SDM performs additional signal processing and compares the generated signals to values stored in memory. When 2 of the generated signals exceed the stored values, the SDM will cause current to flow through the inflator modules, deploying the side air bags and causing DTC B0055 to set. This DTC is set when the SDM has commanded an air bag deployment with no faults present.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC**

- This SDM detects a frontal crash of sufficient force to warrant deployment of the frontal inflator modules.
- The SDM detects a side impact crash of sufficient force to warrant deployment of a side inflator module.

**Action Taken When the DTC Sets**

- The SDM sets a DTC.
- DTC B0052 or B0053 will set.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.
- The SDM records crash data.

**Conditions for Clearing the DTC**

DTC B0055 is a latched code and cannot be cleared.

**Reference Information****Schematic Reference****SIR Schematics****Connector End View Reference****SIR Connector End Views****Description and Operation****SIR System Description and Operation****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Scan Tool Reference**

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

**Circuit/System Testing**



1. Ignition OFF, Verify that the vehicle does not show any signs of side impact or frontal inflator module deployment.
  - If the vehicle displays any signs of inflator deployment, refer to **Repairs and Inspections Required After a Collision**.
2. With a scan tool verify DTC B0055 is not set.
  - If DTC B0055 is set, replace the SDM.

**Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

**DTC B0056****Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

**DTC Descriptor****DTC B0056 00**

Passenger Frontal Air Bag Suppressed

**Circuit/System Description**

When the ignition is turned ON, the passenger presence system (PPS) and the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within itself. The PPS is used to monitor the weight of an occupant in the front passenger seat. If the pressure from the occupant's weight is less than a specified value or an empty seat is detected, the PPS module will send a suppress signal to the SDM to disable the instrument panel (I/P) module. When the PPS detects a fault within itself, then the PPS will communicate to the SDM through GMLAN communications that a PPS fault is present. The SDM will suppress the deployment of the module and then turn the AIR BAG indicator ON.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC**

This DTC is set when the SDM has commanded an air bag deployment while the PPS has determined that the front passenger seat has one the following conditions:

- The pressure from the occupant's weight is less than a specified value. The PPS module sent a suppress signal to the SDM to suppress the I/P module.
- Empty front passenger seat
- A PPS fault was detected.

**Action Taken When the DTC Sets**

- The SDM sets a DTC B0056.
- DTC B0052, B0053 or B0055 will set along with this DTC.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.

**Conditions for Clearing the DTC**

This code will set along with one of the following latched codes: DTC B0052, B0053 or B0055 and cannot be cleared.

**Diagnostic Aids**

This code set because the PPS commanded to suppress the I/P module when the vehicle was involved in a collision and the SDM has commanded an air bag deployment.

**Reference Information****Schematic Reference****SIR Schematics****Connector End View Reference****SIR Connector End Views****Description and Operation****SIR System Description and Operation****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Scan Tool Reference**

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

**Circuit/System Testing**

1. Ignition OFF, verify that the vehicle does not show any signs of inflator module or pretensioner deployment.
  - If the vehicle displays any signs of inflator deployment, refer to **Repairs and Inspections Required After a Collision**.
2. With a scan tool, verify DTC B0052, B0053 or B0055 is not set.
  - If DTC is set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle**.
3. With a scan tool, clear DTCs, verify DTC B0056 is not set.
  - If DTC is set, replace the SDM.

**Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

**DTC B0057****Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

**DTC Descriptor****DTC B0057 00**

Passenger Side Air Bag Suppressed

**Circuit/System Description**

When the ignition is turned ON, the passenger presence system (PPS) and the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions within itself. The PPS is used to monitor the weight of an occupant in the front passenger seat. If the pressure from the occupant's weight is less than a specified value or an empty seat is detected, the PPS module will send a suppress signal to the SDM to disable the passenger side impact module (front seat air bag). When the PPS detects a fault within itself, then the PPS will communicate to the SDM through GMLAN communications that a PPS fault is present.

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The SDM will suppress the deployment of the module and then turn the AIR BAG indicator ON.

#### **Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

#### **Conditions for Setting the DTC**

This DTC is set when the SDM has commanded an air bag deployment while the PPS has determined that the front passenger seat has one the following conditions:

- The pressure from the occupants weight is less than a specified value. The PPS module sent a suppress signal to the SDM to suppress the side impact module.
- Empty front passenger seat
- A PPS fault was detected

#### **Action Taken When the DTC Sets**

- The SDM sets a DTC B0057.
- DTC B0052, B0053 or B0055 will set along with this DTC.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.

#### **Conditions for Clearing the DTC**

This code will set along with one of the following latched codes: DTC B0052, B0053 or B0055 and cannot be cleared.

#### **Diagnostic Aids**

This code set because the PPS commanded to suppress the side impact module when the vehicle was involved in a collision and the SDM has commanded an air bag deployment.

#### **Reference Information**

##### **Schematic Reference**

### **SIR Schematics**

##### **Connector End View Reference**

### **SIR Connector End Views**

##### **Description and Operation**

### **SIR System Description and Operation**

**Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Scan Tool Reference**

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

**Circuit/System Testing**

1. Ignition OFF, verify no signs of inflator module or pretensioner deployment exist.
  - If any signs of deployment exist, refer to **Repairs and Inspections Required After a Collision**.
2. With a scan tool, verify DTC B0052, B0053 or B0055 is not set.
  - If DTC is set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle**.
3. With a scan tool, clear DTCs, verify DTC B0057 is not set.
  - If DTC is set, replace the SDM.

**Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

**DTC B0071****DTC Descriptors****DTC B0071 03**

Passenger Seat Belt Tension Sensor Circuit

**DTC B0071 07**

Passenger Seat Belt Tension Sensor Circuit

**Diagnostic Fault Information**

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

**Circuit/System Description**

The inflatable restraint seat belt tension sensor is a 3-wire potentiometer mounted on the

retractor or buckle side of the seat belt and provides an input to the passenger presence system (PPS). When an infant car seat is properly restrained on the front passenger seat, the seat belt is tightly secured through the car seat. The seat belt pulls on the tension sensor and changes the voltage signal to the PPS module. The PPS monitors the seat belt tension sensor circuit and if a fault is detected, DTC will be set. When the PPS detects this DTC within the PPS, it will notify the customer of the enable/disable status by turning ON the OFF indicator on the PASSENGER AIR BAG ON/OFF indicators. Then the PPS will communicate to the sensing and diagnostic module (SDM) through a serial data communications that a PPS fault is present. The SDM will then suppress the deployment of the instrument panel (I/P) module and then turn the AIR BAG indicator ON.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC**

- The PPS detects the voltage at the passenger seat belt tension retractor sensor signal is less than 0.05 volt or greater than 4.5 volts for 500 milliseconds.
- The PPS detects the voltage at the passenger seat belt tension retractor sensor 5-volt reference is less than 4.5 volts or greater than 9.1 volts for 500 milliseconds.
- The PPS detects the amperage at the passenger seat belt tension retractor sensor low reference is 25 MA or greater for 500 milliseconds.

**Action Taken When the DTC Sets**

- The PPS will set a DTC and then communicate with the SDM via serial data communications.
- The SDM disables the I/P module deployment loop.
- The PPS will turn ON the passenger air bag status OFF indicator.
- The SDM commands the AIR BAG indicator ON via GMLAN serial data.

**Conditions for Clearing the DTC**

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

**Diagnostic Aids**

Inspect the passenger seat belt tension retractor sensor signal, 5-volt reference and low reference circuits carefully for cutting and/or chafing.

**Reference Information**

**Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Circuit/System Testing****IMPORTANT:**

- The seat belt tension retractor sensor is not serviced separately. The seat belt retractor pretensioner replacement - right front with the seat belt tension retractor sensor must be serviced as a complete unit.
- When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:
  - The seat belt retractor pretensioner - RF
  - The PPS module
  - The seat belt retractor pretensioner - RF wiring harness connector
  - The PPS wiring harness connector

1. Ignition OFF, disconnect the seat belt tension retractor sensor. Refer to **SIR Identification Views** for location of connector.
2. Disconnect the PPS module connector.
3. Test the seat belt tension retractor sensor signal circuit for a short to ground, a high resistance or an open. Verify that a short to ground, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair.
4. Test the seat belt tension retractor sensor 5-volt reference circuit for a short to ground, a short to voltage, a high resistance or an open. Verify that a short to ground, a short to voltage, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair.
5. Test the seat belt tension retractor sensor low reference circuit for a short to ground, a short to voltage, a high resistance or an open. Verify that a short to ground, a short to voltage, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair.
6. Ignition ON, engine OFF test the seat belt tension retractor sensor circuit with a DMM.

Measure the voltage of the seat belt tension retractor sensor circuit harness side and ground. The voltage should read 0.05-4.5 volts.

- If the voltage is more than 5 volts, test the seat belt tension retractor sensor circuit for a short to voltage. If the circuit tests good, replace the PPS.
7. Reconnect all PPS components. Use the scan tool to clear all PPS DTCs. Rezero the PPS. Refer to **Passenger Presence System Rezeroing**. Verify DTC B0071 does not exist.
- If DTC B0071 reset, replace the PPS.

#### **Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Seat Belt Retractor Pretensioner Replacement - Front**
- **Control Module References** for PPS replacement, setup and programming

#### **DTC B0073**

##### **Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

##### **DTC Descriptors**

#### **DTC B0073 01**

Passenger Seat Belt Sensor Circuit Short to Battery

#### **DTC B0073 02**

Passenger Seat Belt Sensor Circuit Short to Ground

#### **DTC B0073 04**

Passenger Seat Belt Sensor Circuit Open

#### **DTC B0073 06**

Passenger Seat Belt Sensor Circuit Short to Ground or Open Circuit

#### **DTC B0073 08**



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**Passenger Seat Belt Sensor Circuit Signal Invalid****Diagnostic Fault Information****DTC B0073**

<b>Circuit</b>	<b>Short to Ground</b>	<b>High Resistance</b>	<b>Open</b>	<b>Short to Voltage</b>	<b>Signal Performance</b>
Seat Belt Sensor Right Low Reference	B0073 02, 06	-	B0073 04	B0073 01	B0073 08
Seat Belt Sensor Right Signal	B0073 02, 06	-	B0073 04	B0073 01	B0073 08

**Circuit/System Description**

The inflatable restraint seat belt tension sensor is a 3-wire potentiometer mounted on the retractor or buckle side of the seat belt and provides an input to the passenger presence system (PPS). When an infant car seat is properly restrained on the front passenger seat, the seat belt is tightly secured through the car seat. The seat belt pulls on the tension sensor and changes the voltage signal to the PPS module. The PPS monitors the seat belt tension sensor circuit and if a fault is detected, a DTC will be set. When the PPS detects this DTC within the PPS, it will notify the customer of the enable/disable status by turning ON the OFF indicator on the PASSENGER AIR BAG ON/OFF indicators. Then the PPS will communicate to the sensing and diagnostic module (SDM) through a serial data communications circuit that a PPS fault is present. The PPS will set a DTC then communicate to the SDM to suppress the deployment of the instrument panel (I/P) module and then turn the AIR BAG indicator ON.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC****B0073 01**

The SDM detects the seat belt sensor circuit is shorted to voltage for 500 milliseconds.

**B0073 02**

The SDM detects the seat belt sensor circuit is shorted to ground for 500 milliseconds.

**B0073 04**

The SDM detects the seat belt sensor circuit is open for 500 milliseconds.

**B0073 06**

The SDM detects the seat belt sensor circuit is shorted to ground or an open occur for 500 milliseconds.

**B0073 08**

The SDM detects the seat belt sensor signal circuit is invalid for 500 milliseconds.

**Action Taken When the DTC Sets**

- The SDM sets a DTC B0073.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.

**Conditions for Clearing the DTC**

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

**Reference Information****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Circuit/System Testing**

- IMPORTANT:**
- The seat belt tension retractor sensor is not serviced separately. The seat belt retractor replacement - right front with the seat belt tension retractor sensor must be serviced as a complete unit.
  - When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:
    - The seat belt retractor pretensioner - RF
    - The PPS module
    - The SDM module
    - The seat belt retractor pretensioner - RF wiring harness connector

- **The PPS wiring harness connector**
- **The SDM wiring harness connector**

1. Ignition OFF, disconnect the seat belt sensor. Refer to **Seat Belt Retractor Pretensioner Replacement - Front** in Repair Instructions for location of connector.
2. Disconnect the PPS module connector. Refer to **Inflatable Restraint Passenger Presence System Replacement - Front** in Repair Instructions for location of connector.
3. Test the seat belt tension retractor sensor signal circuit for a short to ground, a high resistance or an open. Verify that a short to ground, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair.
4. Test the seat belt tension retractor sensor 5-volt reference circuit for a short to ground, a short to voltage, a high resistance or an open. Verify that a short to ground, a short to voltage, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair.
5. Test the seat belt tension retractor sensor low reference circuit for a short to ground, a short to voltage, a high resistance or an open. Verify that a short to ground, a short to voltage, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair
6. Ignition ON, engine OFF test the seat belt tension retractor sensor circuit with a DMM. Measure the voltage of the seat belt tension retractor sensor circuit harness side and ground. The voltage should read 0.05-4.5 volts.
  - If the voltage is more than 5 volts, test the seat belt tension retractor sensor circuit for a short to voltage. If the circuit tests good, replace the PPS.
7. Reconnect all PPS components. Use the scan tool to clear all PPS DTCs. Rezero the PPS. Refer to **Passenger Presence System Rezeroing**. Verify DTC B0073 does not exist.
  - If DTC B0073 reset, replace the PPS.

#### **Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Seat Belt Retractor Pretensioner Replacement - Front**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM and PPS replacement, setup and programming

**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using the diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

**DTC Descriptors****DTC B0074 03**

Passenger Occupant Classification Sensor Circuit Voltage Below Threshold

**DTC B0074 07**

Passenger Occupant Classification Circuit Voltage Above Threshold

**DTC B0074 08**

Passenger Occupant Classification Circuit Signal Invalid

**Circuit/System Description**

The passenger presence system (PPS) uses a silicone filled sensor pad located underneath the passenger seat foam cushion and is connected by a hose clamp to a pressure sensor. The weight of the occupant sitting in the front passenger seat is measured as a pressure change within the bladder by the pressure sensor. The pressure sensor is a 3-wire sensor consisting of a power, ground and signal circuit. The PPS continually monitors itself and if a fault in this circuit occurs, a DTC will set. When the sensing and diagnostic module (SDM) detects this DTC within the PPS, it will notify the customer of the enable/disable status by turning ON the OFF indicator on the PASSENGER AIR BAG ON/OFF indicators. Then the PPS will communicate to the SDM through serial data communications that a PPS fault is present. The SDM will then suppress the deployment of the instrument panel (I/P) module and then turn the AIR BAG indicator ON.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC**

- The PPS detects the voltage at the PPS sensor signal is less than 0.05-volt or greater than 4.5 volts for 500 milliseconds.
- The PPS detects the voltage at the PPS sensor 5-volt reference is less than 4.5 volts or greater than 9.1 volts for 500 milliseconds.

- The PPS detects the amperage at the PPS sensor low reference is 25 mA or greater for 500 milliseconds.

**Action Taken When the DTC Sets**

- The PPS will set a DTC and then communicate with the SDM via serial data communications.
- The SDM disables the I/P module deployment loop.
- The PPS will turn ON the passenger air bag status OFF indicator.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.

**Conditions for Clearing the DTC**

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

**Reference Information****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**
- **SIR/SRS Wiring Repairs**

**Circuit/System Testing**

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- The PPS pressure sensor
  - The PPS module
  - The PPS pressure sensor wiring harness connector
  - The PPS module wiring harness connector
1. Ignition OFF, inspect the component and harness sides of the connector for the PPS pressure sensor. Verify there is no damage or corrosion is found.
  2. Disconnect the PPS module connector.

3. Test the PPS sensor signal circuit for a short to ground, a high resistance or an open. Verify that a short to ground, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair.
4. Test the PPS sensor low reference circuit for a short to ground, a short to voltage, a high resistance or an open. Verify that a short to ground, a short to voltage, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair.
5. Test the PPS sensor 5-volt reference circuit for a short to ground, a short to voltage, a high resistance or an open. Verify that a short to ground, a short to voltage, a high resistance or an open does not exist.
  - If any of the above conditions are found, make the appropriate repair.
6. Ignition ON, engine OFF test the PPS sensor signal circuit with a DMM. Measure the voltage of the PPS sensor circuit harness side and ground. The voltage should read 0.05-4.5 volts.
  - If the voltage is more than 5 volts, test the PPS sensor signal circuit for a short to voltage. If the circuit tests good, replace the PPS.
7. Reconnect all PPS components. Use the scan tool to clear all PPS DTCs. Rezero the PPS. Refer to **Passenger Presence System Rezeroing**. Verify DTC B0074 does not exist.
  - If DTC B0074 reset, replace the PPS.

#### Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

**Control Module References** for PPS replacement, setup and programming

#### DTC B0080

##### DTC Descriptors

#### DTC B0080 01

Passenger Seat Position Sensor Circuit Short to Battery

#### DTC B0080 02

Passenger Seat Position Sensor Circuit Short to Ground

#### DTC B0080 04

Passenger Seat Position Sensor Circuit Open

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**DTC B0080 06**

Passenger Seat Position Sensor Circuit Short to Ground or Open Circuit

**DTC B0080 08**

Passenger Seat Position Sensor Circuit Signal Invalid

**Diagnostic Fault Information**

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

**DTC B0080**

<b>Circuit</b>	<b>Short to Ground</b>	<b>High Resistance</b>	<b>Open</b>	<b>Short to Voltage</b>	<b>Signal Performance</b>
Seat Position Sensor Right Low Reference	B0080 02, 06	-	B0080 04	B0080 01	B0080 08
Seat Position Sensor Right Signal	B008 02, 06	-	B0080 04	B0080 01	B0080 08

**Circuit/System Description**

The inflatable restraint seat position sensor (SPS) is used to determine the proximity of a front driver or passenger seat position with respect to the frontal air bag. The SPS interfaces with the sensing and diagnostic module (SDM). The state of the SPS allows the SDM to disable stage 2 of the frontal air bag for a front seat that is forward of a forward/rearward point in seat track travel. The SPS is a hall effect sensor that is mounted on the outboard seat track of both the driver and passenger seats. The seat track includes a metal bracket that shunts the SPS magnetic circuit creating 2 states of seat position. The shunted state represents a rearward seat position. The non-shunted state represents a forward position. The SPS provides 2 current ranges, one range for the shunted state and a second range for a non-shunted state. These 2 states are inputs to the SDM, state 1 (shunted) being the rearward threshold and state 2 (non-shunted) being the forward threshold. When the SDM receives input from a SPS that state 1 threshold is reached (seat is rearward), the SDM will not disable stage 2 deployment, if required by the deployment sensors. When state 2 threshold is reached (seat is forward), the SDM will disable stage 2 deployment on the side the seat is forward. The SDM monitors the SPS circuit and if a fault is detected, the SDM will set codes B0080 and defaults to disabling stage 2 frontal deployment.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC**

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#### B0080 01

The SDM detects the SPS circuit is shorted to voltage for 500 milliseconds.

#### B0080 02

The SDM detects the SPS circuit is shorted to ground for 500 milliseconds.

#### B0080 04

The SDM detects the SPS circuit is open for 500 milliseconds.

#### B0080 06

The SDM detects the SPS circuit is shorted to ground or an open occur for 500 milliseconds.

#### B0080 08

The SDM detects the SPS signal circuit is invalid for 500 milliseconds.

#### Action Taken When the DTC Sets

- The SDM sets a DTC B0080.
- The SDM defaults the SPS to seat forward threshold.
- The SDM commands ON the AIR BAG warning lamp via serial data communications.

#### Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

#### Reference Information

##### Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

#### Circuit/System Testing

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected



**component/connector:**

- The seat position sensor
- The SDM module
- The seat position sensor wiring harness connector
- The SDM wiring harness connector

1. Ignition OFF, if DTC B0080 is current, disconnect the right SPS connector. Refer to **Inflatable Restraint Seat Position Sensor Replacement** in Repair Instructions for location of connector.
2. Remove the SDM connector. Refer to **Inflatable Restraint Sensing and Diagnostic Module Replacement (AG1/AG2)** or **Inflatable Restraint Sensing and Diagnostic Module Replacement (AM6)** in Repair Instructions for connector location.
3. Test the low reference and signal circuits between the SDM and SPS. Verify that a short to voltage, short to ground or open/low resistance does not exist.
  - If any of the above conditions are found, make the appropriate repair.
4. Reconnect all SIR components. Ignition ON, use the scan tool to clear the DTCs then recheck for DTCs. Verify DTC B0080 does not set.
  - If DTC B0080 was current, replace the right SPS. After replacement, refer to **Repair Verification**.

**Repair Procedures**

- **Inflatable Restraint Seat Position Sensor Replacement**
- **Control Module References** for SDM replacement, setup and programming

**Repair Verification**

Ignition ON, use the scan tool to clear the DTCs then recheck for DTCs. Verify no DTCs are set.

- If DTC B0080 was current, replace the SDM.

**DTC B0081****Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using the diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

**DTC Descriptors****DTC B0081 0F**

Passenger Presence System Erratic

**DTC B0081 3A**

Passenger Presence System Incorrect Component Installed

**DTC B0081 4B**

Passenger Presence System Calibration Not Learned

**DTC B0081 5A**

Passenger Presence System Plausibility Failure

**DTC B0081 39**

Passenger Presence System Internal Electronic Failure

**DTC B0081 71**

Passenger Presence System Invalid Serial Data Received

**Circuit/System Description**

When the ignition is turned ON, the passenger presence system (PPS) and the inflatable restraint sensing and diagnostic module (SDM) performs tests to diagnose critical malfunctions. When the SDM has completed the power-up mode, the SDM will establish communication with the PPS. The SDM will also request the instrument panel cluster (IPC) to command both of the PASSENGER AIR BAG ON/OFF indicators ON for 5 seconds. If the SDM determines the correct PPS is installed and functioning normally, the SDM will turn the passenger side airbag(s) ON or OFF based on messages from the PPS. The SDM will also send a message to the IPC to turn the appropriate PASSENGER AIR BAG ON/OFF indicator on.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC**

All of the following conditions must exist for 5 seconds:

**B0081 0F**

- The SDM has received a fault present message from the PPS.
- The PPS is in assembly plant mode and the SDM is in production mode.

**B0081 3A**

The SDM has received a message from the PPS which indicates a vehicle and PPS mismatch.

**B0081 4B**

The PPS has failed the rezeroing procedure.

**B0081 5A**

- The PPS has lost communications with the SDM.
- When the PPS has requested the passenger air bag indicator to change states (from ON to OFF or OFF to ON) and the SDM change states message does not match with the PPS message.
- After the PPS change states, the SDM signal stating the Passenger Status Data Received is not valid within 2.6 seconds.

**B0081 39**

The SDM has received a critical malfunction message from the PPS.

**B0081 71**

The SDM has received invalid or no serial data from the PPS.

**Action Taken When the DTC Sets**

- The SDM commands the AIR BAG indicator ON and the passenger air bag indicator to display OFF via serial data communications.
- The I/P module deployment loop will be disabled.

**Conditions for Clearing the DTC**

- The condition responsible for setting the DTC no longer exists and there is no activity on the low speed serial data circuits.
- A history DTC will clear once 100 malfunction-free ignition cycles have occurred.

**Diagnostic Aids**

If either the SDM or PPS were replaced, verify that the correct part numbers were used for the vehicle application.

**Reference Information**

**Schematic Reference****SIR Schematics****Connector End View Reference****SIR Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Circuit/System Verification****IMPORTANT:**

- A DTC B0081 set in history may not clear until the PPS module enters the sleep mode.
  - When removing connectors inspect for damage, corrosion or poor connection. Damage or corrosion in the following requires repair or replacement of the affected component/connector.
    - The PPS module
    - The SDM module
    - The PPS module harness connector
    - The SDM wiring harness connector
1. Ignition ON, with a scan tool retrieve DTCs from the PPS. No PPS DTCs should be set.
    - If the PPS has a DTC B0081 4B set, refer to **Passenger Presence System Rezeroing**. If the PPS will not rezero, replace the PPS.
    - If the PPS has only DTC B0081 5A set, replace the PPS.
    - If the PPS has any other DTCs set you must address those DTCs first. Refer to the **Diagnostic Trouble Code (DTC) List - Vehicle** .
  2. With a scan tool retrieve DTCs from the SDM. Ensure the following DTCs are not set.
    - B1000
    - B1001
    - U0170
    - If any DTC listed is set you must address those DTCs first. Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** .

3. Verify that the correct PPS was installed.
  - o If the wrong PPS was installed, install the correct PPS.

### **Clearing DTC B0081**

1. To enter the sleep mode, remove the scan tool, turn the ignition OFF, open and close the driver door.
2. With the ignition OFF and all doors closed, wait 30 seconds.
3. With a scan tool, clear DTC B0081. The DTC should now be cleared.

### **Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for PPS replacement, setup and programming

### **DTC B0083 OR B0084**

#### **Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

#### **DTC Descriptors**

### **DTC B0083 00**

Front End Sensor 1

### **DTC B0083 0F**

Front End Sensor 1 Erratic (Left)

### **DTC B0083 39**

Front End Sensor 1 Internal Electronic Failure (Left)

### **DTC B0083 3A**

Front End Sensor 1 Incorrect Component Installed (Left)

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**DTC B0083 71**

Front End Sensor 1 Invalid Serial Data Received (Left)

**DTC B0084 00**

Front End Sensor 2

**DTC B0084 0F**

Front End Sensor 2 Erratic (Right)

**DTC B0084 39**

Front End Sensor 2 Internal Electronic Failure (Right)

**DTC B0084 3A**

Front End Sensor 2 Incorrect Component Installed (Right)

**DTC B0084 71**

Front End Sensor 2 Invalid Serial Data Received (Right)

**Diagnostic Fault Information****DTC B0083 or B0084**

<b>Circuit</b>	<b>Short to Ground</b>	<b>High Resistance</b>	<b>Open</b>	<b>Short to Voltage</b>	<b>Signal Performance</b>
Front End Sensor 1 Signal Circuit	B0083 00	B0083 00	B0083 00	B0083 00	B0083 0F
Front End Sensor 1 Low Reference Circuit	-	B0083 00	B0083 00	B0083 00	B0083 0F
Front End Sensor 2 Signal Circuit	B0084 00	B0084 00	B0084 00	B0084 00	B0084 0F
Front End Sensor 2 Low Reference Circuit	-	B0084 00	B0084 00	B0084 00	B0084 0F

**Circuit/System Description**

The inflatable restraint front end sensor utilizes a unidirectional 2-wire circuit. The front end sensor modulates current on the interface to send ID, state of health and deployment commands to the inflatable restraint sensing and diagnostic module (SDM). The SDM serves as a power source and a ground for the front end sensor. When the ignition is turned ON and input power

from the SDM is first detected, the front end sensor responds by performing internal diagnostics and sending an ID to the SDM. The SDM considers the ID to be valid if the response time is less than 5 seconds. The front end sensor continually communicates status messages to the SDM, which determines if a fault is present in the front end sensor circuit. When a fault is detected, the SDM may reset the front end sensor up to 2 times by removing and reapplying power to it. If the fault is still present, the SDM will set a DTC.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC**

All of the following conditions exist for 2.5 seconds:

**B0083 00 or B0084 00**

- The front end sensor has been shorted to ground.
- The front end sensor has been shorted to voltage.
- The front end sensor circuit is open.
- The SDM has not received a message from the front end sensor for more than 375 milliseconds.
- The front end sensor current has been above 23 mA for longer than 5 milliseconds.

**B0083 0F or B0084 0F**

The SDM has received erratic messages from the front end sensor.

**B0083 39 or B0084 39**

- The SDM has received a NOK message from the front end sensor.
- The SDM has not received a message.

**B0083 3A or B0084 3A**

- The SDM has received an ID message from the front end sensor, which does not match the ID stored in the SDM memory.
- The SDM has reset the front end sensor twice without detecting the correct ID message.

**B0083 71 or B0084 71**

The SDM has received invalid serial data from the front end sensor.

**Action Taken When the DTC Sets**

- The SDM commands the AIR BAG indicator ON via serial data communications.

- The SIR System is disabled and no deployments are allowed.

**Conditions for Clearing the DTC**

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

**Diagnostic Aids**

A short to voltage on the low reference circuit for either right or left front end sensor will cause the Air Bag fuse to fail/open with no DTC code set.

**Reference Information****Schematic Reference****SIR Schematics****Connector End View Reference****SIR Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Circuit/System Testing**

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- The front end sensor
- The SDM module
- The front end sensor wiring harness connector
- The SDM wiring harness connector

1. Ignition ON, if DTC B0083 is current, disconnect the front end sensor - left connector. If DTC B0084 is current, disconnect the front end sensor - right connector.



2. Remove the SDM connector.
3. Test the signal and voltage circuits between the SDM and front end sensor for a short to voltage, short to ground or open/low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
  - If any of the above conditions are found, make the appropriate repair.
4. Reconnect all SIR components. With the ignition ON, use the scan tool to clear the DTCs then recheck for DTCs.
  - If DTC B0083 was current, replace the front end sensor - left. If DTC B0084 was current, replace the front end sensor - right.

**Repair Procedures**

- **Inflatable Restraint Front End Sensor Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

**Repair Verification**

Ignition ON, use the scan tool to clear the DTCs, then recheck for DTCs.

- If DTC B0083 or B0084 was current, replace the SDM.

**DTC B0085 OR B0086****Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

**DTC Descriptors****DTC B0085 00**

Left Front Side Impact Sensor

**DTC B0085 02**

Left Front Side Impact Sensor Short to Ground

**DTC B0085 05**

Left Front Side Impact Sensor Short to Voltage

**DTC B0085 0F**

Left Front Side Impact Sensor Erratic

**DTC B0085 39**

Left Front Side Impact Sensor Internal Electronic Failure

**DTC B0085 3A**

Left Front Side Impact Sensor Incorrect Component Installed

**DTC B0085 71**

Left Front Side Impact Sensor Invalid Serial Data Received

**DTC B0086 00**

Right Front Side Impact Sensor

**DTC B0086 02**

Right Front Side Impact Sensor Short to Ground

**DTC B0086 05**

Right Front Side Impact Sensor Short to Voltage

**DTC B0086 0F**

Right Front Side Impact Sensor Erratic

**DTC B0086 39**

Right Front Side Impact Sensor Internal Electronic Failure

**DTC B0086 3A**

Right Front Side Impact Sensor Incorrect Component Installed

**DTC B0086 71**

Right Front Side Impact Sensor Invalid Serial Data Received

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**DTC B0085 or B0086**

<b>Circuit</b>	<b>Short to Ground</b>	<b>High Resistance</b>	<b>Open</b>	<b>Short to Voltage</b>	<b>Signal Performance</b>
Side Impact Sensor LF Signal Circuit	-	B0085 00	B0085 00	B0085 00	B0085 0F
Side Impact Sensor LF Voltage	B0085 00	B0085 00	B0085 00	-	B0085 0F
Side Impact Sensor RF Signal Circuit	-	-	B0086 04	-	B0086 0F
Side Impact Sensor RF Voltage	B0086 00	B0086 00	B0086 00	-	B0086 0F

**Circuit/System Description**

The inflatable restraint side impact sensor (SIS) utilizes a unidirectional 2-wire circuit. The SIS modulates current on the interface to send ID, state of health and deployment commands to the inflatable restraint sensing and diagnostic module (SDM). The SDM serves as a power source and a ground for the SIS. When the ignition is turned ON and input power from the SDM is first detected, the SIS responds by performing internal diagnostics and sending an ID to the SDM. The SDM considers the ID to be valid if the response time is less than 5 seconds. The SIS continually communicates status messages to the SDM, which determines if a fault is present in the SIS circuit. When a fault is detected, the SDM resets the SIS twice by removing and reapplying power to it. If the fault is still present, the SDM will set a DTC.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC**

All of the following conditions exist for 2.5 seconds:

**B0085 02 or B0086 02**

- The SIS has been shorted to ground.
- The SIS current has been above 23 mA for longer than 5 milliseconds.

**B0085 05 or B0086 05**

- The SIS has been shorted to voltage.
- The SIS circuit is open.
- The SDM has not received a message from the SIS for more than 375 milliseconds.

**B0085 0F or B0086 0F**

The SDM has received erratic messages from the SIS.

**B0085 39 or B0086 39**

- The SDM has received a NOK message from the SIS.
- The SDM has not received a message.

**B0085 3A or B0086 3A**

- The SDM has received an ID message from the SIS which does not match the ID stored in the SDM memory.
- The SDM has reset the SIS twice without detecting the correct ID message.

**B0085 71 or B0086 71**

The SDM has received invalid serial data from the SIS.

**Action Taken When the DTC Sets**

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SIR System is disabled and no deployments are allowed.

**Conditions for Clearing the DTC**

- The condition responsible for setting the DTC no longer exists and the scan tool Clear DTCs function is used.
- A history DTC will clear once 255 malfunction-free ignition cycles have occurred.

**Reference Information****Schematic Reference****SIR Schematics****Connector End View Reference****SIR Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Circuit/System Testing**

**IMPORTANT: When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:**

- The SIS
- The SDM module
- The SIS wiring harness connector
- The SDM wiring harness connector

1. Ignition OFF, if DTC B0085 is current, disconnect the LF SIS connector. If DTC B0086 is current, disconnect the RF SIS connector.
2. Remove the SDM connector.
3. Test the signal and voltage circuits between the SDM and SIS for a short to voltage, short to ground or open/low resistance. Verify that a short to voltage, short to ground or open/low resistance does not exist.
  - If any of the above conditions are found, make the appropriate repair.
4. Reconnect all SIR components, turn the ignition ON and with a scan tool clear and recheck for DTCs.
  - If DTC B0085 is current, replace the LF SIS. If DTC B0086 is current, replace the RF SIS. After replacement, clear and recheck for DTCs if DTC B0085 or DTC B0086 are still current, replace the SDM.

#### Repair Procedures

- **Inflatable Restraint Side Impact Sensor Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

#### DTC B1001

##### Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

##### DTC Descriptor

#### DTC B1001 00

## SDM Option Configuration Error

### Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) stores a primary data key, which is a 4-digit number and a secondary data key, which is a portion of the vehicle identification number (VIN). When the ignition is turned ON, the SDM compares this information to the information stored in the body control module (BCM) over the serial data communication circuit. If there is a mismatch between the information stored in the SDM and BCM, DTC B1001 will set.

### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

### Conditions for Setting the DTC

- The 4-digit primary data key stored in the SDM does not match the 4 digits stored in the BCM.
- The VIN stored in the BCM does not match that of the vehicle.
- The VIN stored in the SDM does not match that of the BCM.

### Action Taken When the DTC Sets

- The SDM commands ON the AIR BAG warning lamp via serial data communications.
- The SDM disables all deployments.

### Conditions for Clearing the DTC

- The last 4-digit Primary Data Key in the SDM match the last 4 digits stored in the BCM.
- The VIN that is stored in the SDM matches the VIN stored in the BCM.

### Diagnostic Aids

This DTC is an indication that an incorrect SDM is installed in the vehicle or that the SDM and/or the BCM was replaced without reprogramming with the new information.

### Reference Information

#### Description and Operation Reference

### SIR System Description and Operation

#### Electrical Information Reference

- Circuit Testing

- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Scan Tool Reference**

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

**Circuit/System Testing**

1. Ignition ON, use the scan tool to request SIR DTCs. Verify that DTC B1001 is set as current.
  - If DTC B1001 is history, clear DTCs and recheck.
2. Verify the scan tool parameter Secondary Key Status is Valid.
  - If the Secondary Key Status is not valid, verify that Received VIN Digits 2-5 and Received VIN Digits 2-5 parameters match the vehicle VIN. If the parameters do not match the VIN, reprogram the BCM.
  - If the Secondary Key Status is not valid, verify that Received VIN Digits 2-5 and Received VIN Digits 6-7 parameters match the vehicle VIN. If the parameters match the VIN, reprogram the SDM.
3. Verify the scan tool parameter Primary Key Status is Valid.
  - If the Primary Key Status is not valid, verify that the Received Primary Key and the SDM Primary Key parameters match. If the parameters do not match, use the scan tool to perform the Setup SDM Primary Key in BCM.
4. If all parameters are correct, use the scan tool to clear the DTCs. Verify that DTC B1001 is cleared.
  - If DTC B1001 is still current, replace the SDM.

**Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM and BCM replacement, setup and programming

**DTC B1019****Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

**DTC Descriptors****DTC B1019 00**

System Configuration Error

**DTC B1019 3A**

Incorrect Component Installed

**Circuit/System Description**

The inflatable restraint sensing and diagnostic module (SDM) runs continuous diagnostic tests on the restraints system. If the SDM does not detect the passenger presence system (PPS) indicator or detects a fault in the PPS indicator circuit, DTC B1019 3A will set.

After the SDM is programmed, the SDM setup procedure is required. During this set up procedure, the SDM will compare the content that was just programmed to the actual components that are installed on the vehicle. If the SDM detects that there are too few or too many components on the system, DTC B1019 00 will set and not allow the setup procedure to complete.

**Conditions for Running the DTC**

Ignition voltage is between 9-16 volts.

**Conditions for Setting the DTC****B1019 00**

- The SDM was programmed with the wrong options for the vehicle.
- The wrong components were installed for the content of the vehicle.
- SDM connector may have bent pins or shorting bars causing the SDM to learn deployment loops that are not actually present.

**B1019 3A**

- The vehicle was configured for passenger presence system (PPS) but the SDM does not detect that the PPS indicator is present due to loss of power at indicator.
- The vehicle is not configured for PPS and the SDM detects that the PPS indicator is present.



**Action Taken When the DTC Sets**

- The SDM commands ON the AIR BAG warning lamp via serial data communications.
- The SDM disables all deployments when B1019 00 DTC is set current, not for B1019 3A.

**Conditions for Clearing the DTC**

- The correct SDM must be installed.
- The correct components must be installed.
- The PPS indicator operates as indicated in the **SIR System Description and Operation**.

**Diagnostic Aids**

If the SDM has been replaced, make sure that the correct part number was installed for this vehicle. If after programming the SDM and the B1019 00 sets current, check for bent pins or shorting bars at the SDM connector.

**Reference Information****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Circuit/System Testing**

**IMPORTANT: If DTC B1001 is set current, diagnose that fault prior to following this diagnostic procedure.**

**B1019 3A**

1. If the vehicle is equipped with a PPS system, verify the PPS indicator is present.
  - If not present, install the PPS status indicator
2. Verify the PPS Indicator operates as indicated in the **SIR System Description and Operation**.
  - If operation differs from that outlined in the Description and Operation, correct the fault in the PPS indicator circuit; refer to **Passenger Presence System Indicator Circuit Malfunction** to correct the condition.

**B1019 00**

1. Verify that the vehicle is equipped with all the SIR components it was configured for.
  - Restore the vehicle to the original content and perform the Setup New SDM special function in the scan tool.
2. Remove the SDM connector and verify the SDM connector is in good condition and has no bent pins, terminals or shorting bars.
  - If damage is found, repair the bent pins, terminals or shorting bars as needed and then perform the Setup New SDM special function in the scan tool.
3. Verify the correct SDM part number was installed.
  - If wrong SDM was installed, replace SDM
4. Verify the SDM was programmed with the correct software.
  - If SDM was not programmed correctly, reprogram SDM. Use the Scan Tool to program the SDM. Refer to Repair Instructions for programming procedure.

**Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM or BCM replacement, setup and programming

**DTC B1370****Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

**DTC Descriptors****DTC B1370 01**

Device Ignition 1 Circuit Short to Battery

**DTC B1370 06**

Device Ignition 1 Circuit Short to Ground or Open

**Diagnostic Fault Information**

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### DTC B1370

Circuit	Short to Ground	High Resistance	Open	Short to Voltage	Signal Performance
Ignition 1 Circuit	B1370 06	-	B1370 06	B1370 01	B1370 06

#### Circuit/System Description

The inflatable restraint sensing and diagnostic module (SDM) monitors the ignition 1 signal from the ignition switch. The SDM also compares the ignition 1 input to the power mode message communicated over the vehicle bus. When the vehicle ignition switch is placed in the RUN or CRANK position, voltage is applied to the SDM ignition 1 input terminal. If a fault is detected in the SDM ignition 1 circuit, then DTC B1370 will set.

#### Conditions for Running the DTC

Ignition voltage is between 9-16 volts.

#### Conditions for Setting the DTC

The following conditions exist for at least 10 seconds.

#### B1370 01

The SDM detects a short to battery in the ignition 1 voltage circuit when the switch is in the OFF position.

#### B1370 06

- The SDM detects a short to ground or an open in the ignition 1 voltage circuit when the ignition switch is in RUN or CRANK.
- The SDM sees that the vehicle power mode message is Run/Crank but does not detect the Run/Crank voltage on the ignition 1 input.
- There is an open circuit on the in the control side of the RUN/Crank relay.

#### Action Taken When the DTC Sets

- The SDM commands the AIR BAG indicator ON via serial data communications.
- The SDM stores DTC to memory.
- The SDM determines its power mode only from the GMLAN power mode messages and discards the ignition 1 input for the remainder of the ignition cycle.

#### Conditions for Clearing the DTC

- A current DTC clears when the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold,

without a repeat of the malfunction.

#### **Diagnostic Aids**

The SIR fuse could be open and DTC B1370 will set if the low reference circuit is shorted to voltage/battery with no sensor code set for one of the following sensors:

- Right or Left front end sensors
- Right or Left side impact sensors

There is a current fault on the control side of the RUN/CRANK relay.

#### **Reference Information**

##### **Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

#### **Circuit/System Testing**

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- **The SDM module**
  - **The SDM wiring harness connector**
1. Ignition OFF, remove the Air Bag fuse from the underhood fuse center. Ignition ON, engine OFF test the voltage from the supply voltage side of the AIR BAG fuse to a ground with a DMM. The voltage should read 9-16 volts.
    - If the voltage is less than 9-16 volts, correct the open or short on the voltage supply circuit or the open in the control side of the RUN/CRANK relay.
  2. Remove the SDM connector. With the air bag fuse removed, test the ignition 1 voltage circuit between the underhood fuse center and the SDM for a short to voltage or an open. Verify that a short to voltage or an open does not exist.
    - If any of the above conditions are found, make the appropriate repair.
    - If ignition 1 voltage circuit test normal then refer to **Diagnostic Aids**.
  3. If all circuits test normal, replace the SDM.

**Repair Procedures**

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for SDM replacement, setup and programming

**PASSENGER PRESENCE SYSTEM REZEROING****Introduction**

The Inflatable Restraints Passenger Presence System (PPS) is a calibrated system that requires rezeroing anytime the seat cushion trim attachments have been removed or the PPS has been replaced. The procedures below are designed to assist in the rezeroing of the PPS. Before you start, read these procedures carefully and completely. For further information regarding the PPS refer to **SIR System Description and Operation**.

**IMPORTANT: The following procedures must be followed:**

1. Read this procedure carefully and completely.
2. The PPS will not function properly if the PPS rezeroing procedure is not performed.
3. Perform the **Diagnostic System Check - Vehicle** after successfully completing the rezeroing procedure to ensure the system is functioning properly.

**Passenger Presence System (PPS) Rezeroing Procedure**

**IMPORTANT: Before rezeroing the PPS, the front passenger seat must be completely empty of all items. The presence of any items on the front passenger seat will affect the calibration and operation of the PPS.**

1. Empty the front outboard passenger seat.
2. Verify that all SIR and PPS components, connectors and connector position assurances (CPAs) are properly connected and mounted.
3. Install a scan tool.
4. Turn ON the ignition, with the engine OFF.

**IMPORTANT: DTC B0081 4B may be set prior to rezeroing the system if the system was replaced with a service kit. All other SIR and PPS DTCs must be cleared before rezeroing the PPS. The presence of current or history DTCs will prevent the PPS from rezeroing and may set additional DTCs.**

5. Use the scan tool in order to clear the SIR and PPS DTCs.
6. With a scan tool, request the PPS rezeroing procedure.
7. Initiate the PPS rezeroing procedure. The PPS will illuminate both PASSENGER AIR BAG ON and OFF indicators until the rezeroing procedure has been completed.
8. When the rezeroing procedure has been successfully completed, the PPS will display the current system status.
9. If the rezeroing procedure was unsuccessful, repeat this procedure. Due to the communication status between the SDM and the PPS module, this procedure may have to be repeated until a successful rezero attempt has been achieved.
10. After the PPS has been successfully rezeroed, perform the **Diagnostic System Check - Vehicle**.

## **SYMPTOMS - SIR**

**IMPORTANT: Complete the following steps before using the symptom tables:**

1. Perform **Diagnostic System Check - Vehicle** before using the symptom tables in order to verify that all of the following are true:
  - There are no DTCs set.
  - The inflatable restraint sensing and diagnostic module (SDM) can communicate via the serial data link.
2. Review the SIR system description and operation in order to familiarize yourself with the system functions. Refer to **SIR System Description and Operation**.

### **Visual/Physical Inspection**

- Inspect for aftermarket devices which could affect the operation of the SIR system. Refer to **Checking Aftermarket Accessories**.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

### **Intermittent**

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections**.

### **Symptom List**

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Air Bag Indicator Circuit Malfunction** in order to diagnose the symptom.

- **Passenger Presence System Indicator Circuit Malfunction** in order to diagnose the symptom.

## **AIR BAG INDICATOR CIRCUIT MALFUNCTION**

### **Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

### **Circuit/System Description**

When the ignition is turned ON, the instrument panel cluster (IPC) flashes the AIR BAG indicator 7 times. The inflatable restraint sensing and diagnostic module (SDM) performs diagnostic tests on the SIR system and then commands the IPC to turn the AIR BAG indicator OFF if no SIR malfunction exists. The AIR BAG indicator is controlled by the SDM via serial data communications. If the ignition 1 voltage is outside of the normal operating voltage range 9-16 volts, the SDM will command the IPC to turn the AIR BAG indicator ON with no DTCs present then disables all deployment loops.

### **Reference Information**

#### **Schematic Reference**

#### **SIR Schematics**

#### **Connector End View Reference**

#### **SIR Connector End Views**

#### **Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

### **Diagnostic Aids**

A DTC B1370 may set if the ignition 1 circuit is outside the 9-16 volts range.

### **Circuit/System Testing**

1. Ignition ON, use the scan tool to request the SIR data list display. Observe the Battery

Voltage Parameter. The battery voltage on the scan tool should read 9-16 volts.

- If the voltage is less than 9 volts, refer to **Diagnostic System Check - Vehicle**.
- 2. Ignition ON, monitor the IPC. The SIR warning indicator should flash then turn OFF. Verify that the SIR warning indicator flashes and then turns OFF.
  - If the SIR warning indicator continually flashes then reprogrammed the SDM.
- 3. Using the scan tool, go to Body and Accessories, then go onward to Special Functions to Instrument Panel Cluster and then go to Display Test. In the Display Test mode you can turn ON or OFF all the instrument panel indicators when commanded ON. Commanded the IPC indicators ON. The Air Bag indicator should turn ON.
  - If the Air Bag indicator does not turn ON, replace the IPC.
- 4. If the scan tool commands the Air Bag indicator ON and OFF, replace the SDM.

#### Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **SIR/SRS Wiring Repairs**
- **Control Module References** for IPC and SDM replacement, setup and programming

#### PASSENGER PRESENCE SYSTEM INDICATOR CIRCUIT MALFUNCTION

##### Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

##### Circuit/System Description

The PASSENGER AIR BAG ON/OFF indicators are used to notify the driver when the Passenger Presence System (PPS) has enabled or disabled the instrument panel (I/P) inflator module. When the ignition is turned ON, the PPS module will commands both PASSENGER AIR BAG ON/OFF indicators ON for 5 seconds. The PPS module conducts tests on the PPS components and circuits while both PASSENGER AIR BAG ON/OFF indicators are ON. If no malfunctions are detected, the PPS module will turn the PASSENGER AIR BAG indicator ON or OFF, depending on the status of the PPS. If a malfunction is detected, the PPS module will store a DTC, default the PPS to the OFF state and communicate with the sensing and diagnostic module (SDM) that a DTC has been set. The SDM will request the instrument panel cluster (IPC) to turn the AIR BAG indicator ON to notify the driver of a malfunction.

##### Reference Information



**Schematic Reference****SIR Schematics****Connector End View Reference****SIR Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

**Circuit/System Testing**

**IMPORTANT:** When removing connectors, inspect for damage or corrosion. Damage or corrosion in the following requires repair or replacement of the affected component/connector:

- The IPC module
  - The PPS module
  - The SDM module
  - The IPC module wiring harness connector
  - The PPS module wiring harness connector
  - The SDM wiring harness connector
1. Using the scan tool, go to Body and Accessories, then go onward to Special Functions to Instrument Panel Cluster (IPC) and then go to Display Test. In the Display Test mode you can turn ON or OFF all the instrument panel indicators when commanded ON. Commanded the IPC indicators ON. The PPS indicators should turn ON.
    - If the passenger AIR BAG ON/OFF indicator does not turn ON, remove the connector from the PPS indicator display.
    - On the PPS connector, test and repair the passenger AIR BAG ON/OFF indicator voltage circuit for a short to ground, a high resistance or an open. If any of these conditions are found, make the appropriate repair.
    - Connect a test lamp between the ignition 1 voltage circuit and passenger AIR BAG OFF indicator control circuit on the passenger AIR BAG ON/OFF indicator connector. With the passenger seat empty, use a scan tool to command the display test. Verify the test lamp illuminates.

- If test lamp illuminates, replace the passenger AIR BAG ON/OFF indicator.
- Remove the IPC connector. Test and repair both ON and OFF indicator control circuits between the PPS indicator and the IPC for a short to voltage, high resistance or an open. If any of these conditions are found, make the appropriate repair.
- If passenger AIR BAG ON/OFF indicator voltage, ON and OFF circuits test good, replace the IPC.

2. PPS indicators turns ON when command ON then replace the PPS.

#### Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Instrument Panel Inflatable Restraint Module Indicator Replacement**
- **SIR/SRS Wiring Repairs**
- **Control Module References** for IPC and PPS replacement, setup and programming

#### SIR DISABLING AND ENABLING

SIR component location affects how a vehicle should be serviced. There are parts of the SIR system installed in various locations around a vehicle. To find the location of the SIR components, refer to **SIR Identification Views**.

There are several reasons for disabling the SIR system, such as repairs to the SIR system or servicing a component near or attached to an SIR component. There are several ways to disable the SIR system depending on what type of service is being performed. The following information covers the proper procedures for disabling/enabling the SIR system.

#### SIR Disabling and Enabling

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to <b><u>Repairs and Inspections Required After a Collision</u></b> .
When performing SIR diagnostics.	Follow the appropriate SIR service information diagnostic procedure(s) *
When removing or replacing an SIR component or a component attached to an SIR component.	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to

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components other than the SIR system. | disable the SIR system

\* DTCs will be lost when the negative battery cable is disconnected.

### SIR Service Precautions

**CAUTION: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Failure to observe the correct procedure could cause deployment of the SIR components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary SIR system repairs.**

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags if the SDM loses battery power during a collision. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Waiting 1 minute before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

### General Service Instructions

The following are general service instructions which must be followed in order to properly repair the vehicle and return it to its original integrity:

- Do not expose inflator modules to temperatures above 65°C (150°F).
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.
- Use only original GM replacement parts available from your authorized GM dealer. Do not use salvaged parts for repairs to the SIR system.

Discard any of the following components if it has been dropped from a height of 91 cm (3 ft) or greater:

- Inflatable restraint SDM
- Any Inflatable restraint air bag module
- Inflatable restraint steering wheel module coil
- Any Inflatable restraint sensor
- Inflatable restraint seat belt pretensioners
- Inflatable restraint passenger presence system (PPS) module or sensor

### Disabling Procedure - Air Bag Fuse

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.

2. Place the ignition in the OFF position.

**IMPORTANT:** The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation and does not indicate a SIR system malfunction.

3. Locate and remove the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
4. Wait 1 minute before working on the system.

#### **Enabling Procedure - Air Bag Fuse**

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

#### **Disabling Procedure - Negative Battery Cable**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
4. Wait 1 minute before working on system.

## **REPAIR INSTRUCTIONS**

### **SIR DISABLING AND ENABLING**

SIR component location affects how a vehicle should be serviced. There are parts of the SIR system installed in various locations around a vehicle. To find the location of the SIR components, refer to **SIR Identification Views**.

There are several reasons for disabling the SIR system, such as repairs to the SIR system or servicing a component near or attached to an SIR component. There are several ways to

disable the SIR system depending on what type of service is being performed. The following information covers the proper procedures for disabling/enabling the SIR system.

### SIR Disabling and Enabling

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to <b><u>Repairs and Inspections Required After a Collision.</u></b>
When performing SIR diagnostics.	Follow the appropriate SIR service information diagnostic procedure(s) *
When removing or replacing an SIR component or a component attached to an SIR component.	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on components other than the SIR system.	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to disable the SIR system
* DTCs will be lost when the negative battery cable is disconnected.	

### SIR Service Precautions

**CAUTION:** When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Failure to observe the correct procedure could cause deployment of the SIR components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary SIR system repairs.

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags if the SDM loses battery power during a collision. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Waiting 1 minute before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

### General Service Instructions

The following are general service instructions which must be followed in order to properly repair the vehicle and return it to its original integrity:

- Do not expose inflator modules to temperatures above 65°C (150°F).
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.

- Use only original GM replacement parts available from your authorized GM dealer. Do not use salvaged parts for repairs to the SIR system.

Discard any of the following components if it has been dropped from a height of 91 cm (3 ft) or greater:

- Inflatable restraint SDM
- Any Inflatable restraint air bag module
- Inflatable restraint steering wheel module coil
- Any Inflatable restraint sensor
- Inflatable restraint seat belt pretensioners
- Inflatable restraint passenger presence system (PPS) module or sensor

### **Disabling Procedure - Air Bag Fuse**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.

**IMPORTANT:** The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation and does not indicate a SIR system malfunction.

3. Locate and remove the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
4. Wait 1 minute before working on the system.

### **Enabling Procedure - Air Bag Fuse**

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

### **Disabling Procedure - Negative Battery Cable**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
4. Wait 1 minute before working on system.

### Enabling Procedure - Negative Battery Cable

1. Place the ignition in the OFF position.
2. Connect the negative battery cable to the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

### SIR DISABLING AND ENABLING

SIR component location affects how a vehicle should be serviced. There are parts of the SIR system installed in various locations around a vehicle. To find the location of the SIR components, refer to **SIR Identification Views**.

There are several reasons for disabling the SIR system, such as repairs to the SIR system or servicing a component near or attached to an SIR component. There are several ways to disable the SIR system depending on what type of service is being performed. The following information covers the proper procedures for disabling/enabling the SIR system.

### SIR Disabling and Enabling

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to <b><u>Repairs and Inspections Required After a Collision</u></b> .
When performing SIR diagnostics.	Follow the appropriate SIR service information diagnostic procedure(s) *
When removing or replacing an SIR component or a component attached to an SIR component.	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on components other than the SIR system.	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to

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disable the SIR system

\* DTCs will be lost when the negative battery cable is disconnected.

### SIR Service Precautions

**CAUTION:** When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Failure to observe the correct procedure could cause deployment of the SIR components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary SIR system repairs.

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags if the SDM loses battery power during a collision. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Waiting 1 minute before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

### General Service Instructions

The following are general service instructions which must be followed in order to properly repair the vehicle and return it to its original integrity:

- Do not expose inflator modules to temperatures above 65°C (150°F).
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.
- Use only original GM replacement parts available from your authorized GM dealer. Do not use salvaged parts for repairs to the SIR system.

Discard any of the following components if it has been dropped from a height of 91 cm (3 ft) or greater:

- Inflatable restraint SDM
- Any Inflatable restraint air bag module
- Inflatable restraint steering wheel module coil
- Any Inflatable restraint sensor
- Inflatable restraint seat belt pretensioners
- Inflatable restraint passenger presence system (PPS) module or sensor

### Disabling Procedure - Air Bag Fuse

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.



2. Place the ignition in the OFF position.

**IMPORTANT:** The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation and does not indicate a SIR system malfunction.

3. Locate and remove the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
4. Wait 1 minute before working on the system.

#### **Enabling Procedure - Air Bag Fuse**

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

#### **Disabling Procedure - Negative Battery Cable**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
4. Wait 1 minute before working on system.

#### **Enabling Procedure - Negative Battery Cable**

1. Place the ignition in the OFF position.
2. Connect the negative battery cable to the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

## SIR DISABLING AND ENABLING

SIR component location affects how a vehicle should be serviced. There are parts of the SIR system installed in various locations around a vehicle. To find the location of the SIR components, refer to **SIR Identification Views**.

There are several reasons for disabling the SIR system, such as repairs to the SIR system or servicing a component near or attached to an SIR component. There are several ways to disable the SIR system depending on what type of service is being performed. The following information covers the proper procedures for disabling/enabling the SIR system.

### SIR Disabling and Enabling

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to <b><u>Repairs and Inspections Required After a Collision</u></b> .
When performing SIR diagnostics.	Follow the appropriate SIR service information diagnostic procedure(s) *
When removing or replacing an SIR component or a component attached to an SIR component.	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on components other than the SIR system.	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to disable the SIR system
* DTCs will be lost when the negative battery cable is disconnected.	

### SIR Service Precautions

**CAUTION:** When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Failure to observe the correct procedure could cause deployment of the SIR components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary SIR system repairs.

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags if the SDM loses battery power during a collision. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Waiting 1 minute before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

**General Service Instructions**

The following are general service instructions which must be followed in order to properly repair the vehicle and return it to its original integrity:

- Do not expose inflator modules to temperatures above 65°C (150°F).
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.
- Use only original GM replacement parts available from your authorized GM dealer. Do not use salvaged parts for repairs to the SIR system.

Discard any of the following components if it has been dropped from a height of 91 cm (3 ft) or greater:

- Inflatable restraint SDM
- Any Inflatable restraint air bag module
- Inflatable restraint steering wheel module coil
- Any Inflatable restraint sensor
- Inflatable restraint seat belt pretensioners
- Inflatable restraint passenger presence system (PPS) module or sensor

**Disabling Procedure - Air Bag Fuse**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.

**IMPORTANT:** The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation and does not indicate a SIR system malfunction.

3. Locate and remove the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views**.
4. Wait 1 minute before working on the system.

**Enabling Procedure - Air Bag Fuse**

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical**

**Center Identification Views .**

3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

**Disabling Procedure - Negative Battery Cable**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
4. Wait 1 minute before working on system.

**Enabling Procedure - Negative Battery Cable**

1. Place the ignition in the OFF position.
2. Connect the negative battery cable to the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

**SIR DISABLING AND ENABLING**

SIR component location affects how a vehicle should be serviced. There are parts of the SIR system installed in various locations around a vehicle. To find the location of the SIR components, refer to **SIR Identification Views**.

There are several reasons for disabling the SIR system, such as repairs to the SIR system or servicing a component near or attached to an SIR component. There are several ways to disable the SIR system depending on what type of service is being performed. The following information covers the proper procedures for disabling/enabling the SIR system.

**SIR Disabling and Enabling**

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to <b><u>Repairs and Inspections Required After a Collision</u></b> .
When performing SIR diagnostics.	Follow the appropriate SIR service

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	information diagnostic procedure(s) *
When removing or replacing an SIR component or a component attached to an SIR component.	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on components other than the SIR system.	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to disable the SIR system
* DTCs will be lost when the negative battery cable is disconnected.	

### SIR Service Precautions

**CAUTION:** When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Failure to observe the correct procedure could cause deployment of the SIR components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary SIR system repairs.

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags if the SDM loses battery power during a collision. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Waiting 1 minute before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

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The following are general service instructions which must be followed in order to properly repair the vehicle and return it to its original integrity:

- Do not expose inflator modules to temperatures above 65°C (150°F).
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- Inflatable restraint steering wheel module coil
- Any Inflatable restraint sensor
- Inflatable restraint seat belt pretensioners
- Inflatable restraint passenger presence system (PPS) module or sensor

**Disabling Procedure - Air Bag Fuse**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.

**IMPORTANT:** The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation and does not indicate a SIR system malfunction.

3. Locate and remove the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
4. Wait 1 minute before working on the system.

**Enabling Procedure - Air Bag Fuse**

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

**Disabling Procedure - Negative Battery Cable**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
4. Wait 1 minute before working on system.

**Enabling Procedure - Negative Battery Cable**

1. Place the ignition in the OFF position.
2. Connect the negative battery cable to the battery. Refer to **Battery Negative Cable Disconnection and Connection**.
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle**.

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### SIR Disabling and Enabling

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to <b><u>Repairs and Inspections Required After a Collision</u></b> .
When performing SIR diagnostics.	Follow the appropriate SIR service information diagnostic procedure(s) *
When removing or replacing an SIR component or a component attached to an SIR component.	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on components other than the SIR system.	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to disable the SIR system
* DTCs will be lost when the negative battery cable is disconnected.	

### SIR Service Precautions

**CAUTION:** When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Failure to observe the correct procedure could cause deployment of the SIR components. Serious injury can occur. Failure to

**observe the correct procedure could also result in unnecessary SIR system repairs.**

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags if the SDM loses battery power during a collision. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Waiting 1 minute before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

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- Inflatable restraint SDM
- Any Inflatable restraint air bag module
- Inflatable restraint steering wheel module coil
- Any Inflatable restraint sensor
- Inflatable restraint seat belt pretensioners
- Inflatable restraint passenger presence system (PPS) module or sensor

**Disabling Procedure - Air Bag Fuse**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.

**IMPORTANT:** The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation and does not indicate a SIR system malfunction.



3. Locate and remove the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
4. Wait 1 minute before working on the system.

**Enabling Procedure - Air Bag Fuse**

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

**Disabling Procedure - Negative Battery Cable**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
4. Wait 1 minute before working on system.

**Enabling Procedure - Negative Battery Cable**

1. Place the ignition in the OFF position.
2. Connect the negative battery cable to the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

**SIR DISABLING AND ENABLING**

SIR component location affects how a vehicle should be serviced. There are parts of the SIR system installed in various locations around a vehicle. To find the location of the SIR components, refer to **SIR Identification Views**.

There are several reasons for disabling the SIR system, such as repairs to the SIR system or servicing a component near or attached to an SIR component. There are several ways to disable the SIR system depending on what type of service is being performed. The following

information covers the proper procedures for disabling/enabling the SIR system.

### SIR Disabling and Enabling

Condition	Action
If the vehicle was involved in an accident with an air bag deployment.	Disconnect the negative battery cable(s) *. Refer to <b><u>Repairs and Inspections Required After a Collision.</u></b>
When performing SIR diagnostics.	Follow the appropriate SIR service information diagnostic procedure(s) *
When removing or replacing an SIR component or a component attached to an SIR component.	Disconnect the negative battery cable(s) *
If the vehicle is suspected of having shorted electrical wires.	Disconnect the negative battery cable(s) *
When performing electrical diagnosis on components other than the SIR system.	Remove the SIR/Airbag fuse(s) when indicated by the diagnostic procedure to disable the SIR system
* DTCs will be lost when the negative battery cable is disconnected.	

### SIR Service Precautions

**CAUTION:** When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Failure to observe the correct procedure could cause deployment of the SIR components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary SIR system repairs.

The inflatable restraint sensing and diagnostic module (SDM) maintains a reserved energy supply. The reserved energy supply provides deployment power for the air bags if the SDM loses battery power during a collision. Deployment power is available for as much as 1 minute after disconnecting the vehicle power. Waiting 1 minute before working on the system after disabling the SIR system prevents deployment of the air bags from the reserved energy supply.

### General Service Instructions

The following are general service instructions which must be followed in order to properly repair the vehicle and return it to its original integrity:

- Do not expose inflator modules to temperatures above 65°C (150°F).
- Verify the correct replacement part number. Do not substitute a component from a different vehicle.

- Use only original GM replacement parts available from your authorized GM dealer. Do not use salvaged parts for repairs to the SIR system.

Discard any of the following components if it has been dropped from a height of 91 cm (3 ft) or greater:

- Inflatable restraint SDM
- Any Inflatable restraint air bag module
- Inflatable restraint steering wheel module coil
- Any Inflatable restraint sensor
- Inflatable restraint seat belt pretensioners
- Inflatable restraint passenger presence system (PPS) module or sensor

### **Disabling Procedure - Air Bag Fuse**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.

**IMPORTANT:** The SDM may have more than one fused power input. To ensure there is no unwanted SIR deployment, personal injury or unnecessary SIR system repairs, remove all fuses supplying power to the SDM. With all SDM fuses removed and the ignition switch in the ON position, the AIR BAG warning indicator illuminates. This is normal operation and does not indicate a SIR system malfunction.

3. Locate and remove the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
4. Wait 1 minute before working on the system.

### **Enabling Procedure - Air Bag Fuse**

1. Place the ignition in the OFF position.
2. Install the fuse(s) supplying power to the SDM. Refer to **SIR Schematics** or **Electrical Center Identification Views** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

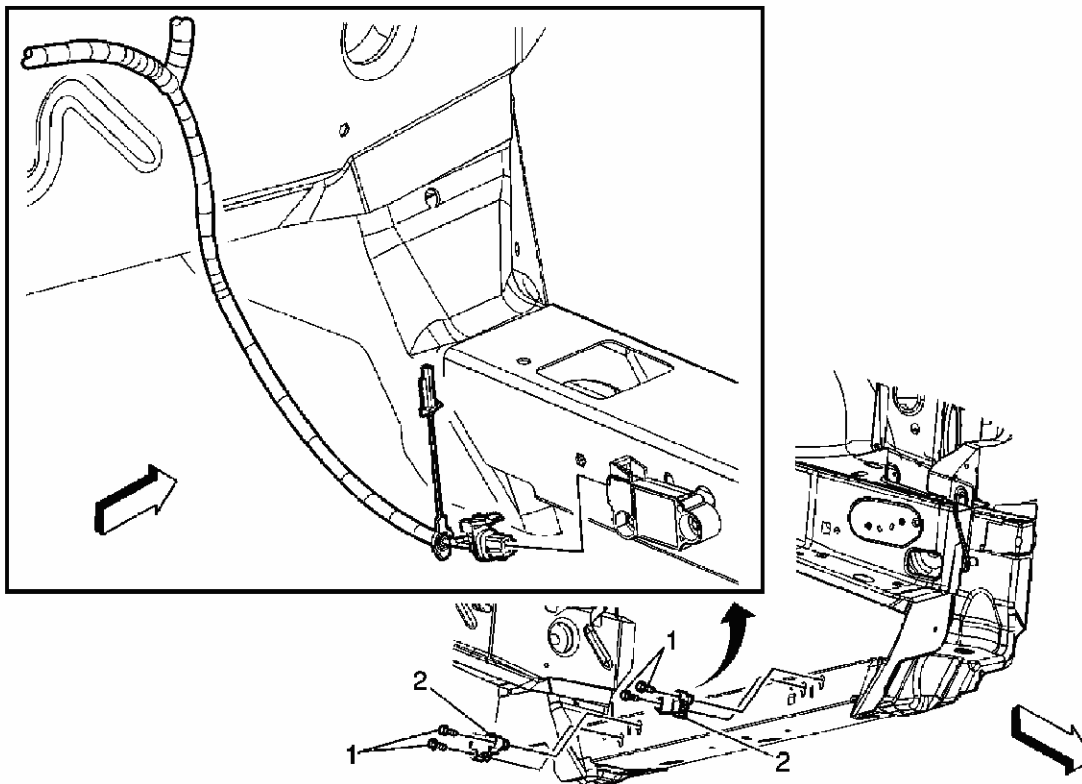
### **Disabling Procedure - Negative Battery Cable**

1. Turn the steering wheel so that the vehicles wheels are pointing straight ahead.
2. Place the ignition in the OFF position.
3. Disconnect the negative battery cable from the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
4. Wait 1 minute before working on system.

### **Enabling Procedure - Negative Battery Cable**

1. Place the ignition in the OFF position.
2. Connect the negative battery cable to the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
3. Turn the ignition switch to the ON position. The AIR BAG indicator will flash then turn OFF.
4. Perform the Diagnostic System Check - Vehicle if the AIR BAG warning indicator does not operate as described. Refer to **Diagnostic System Check - Vehicle** .

### **INFLATABLE RESTRAINT FRONT END SENSOR REPLACEMENT**

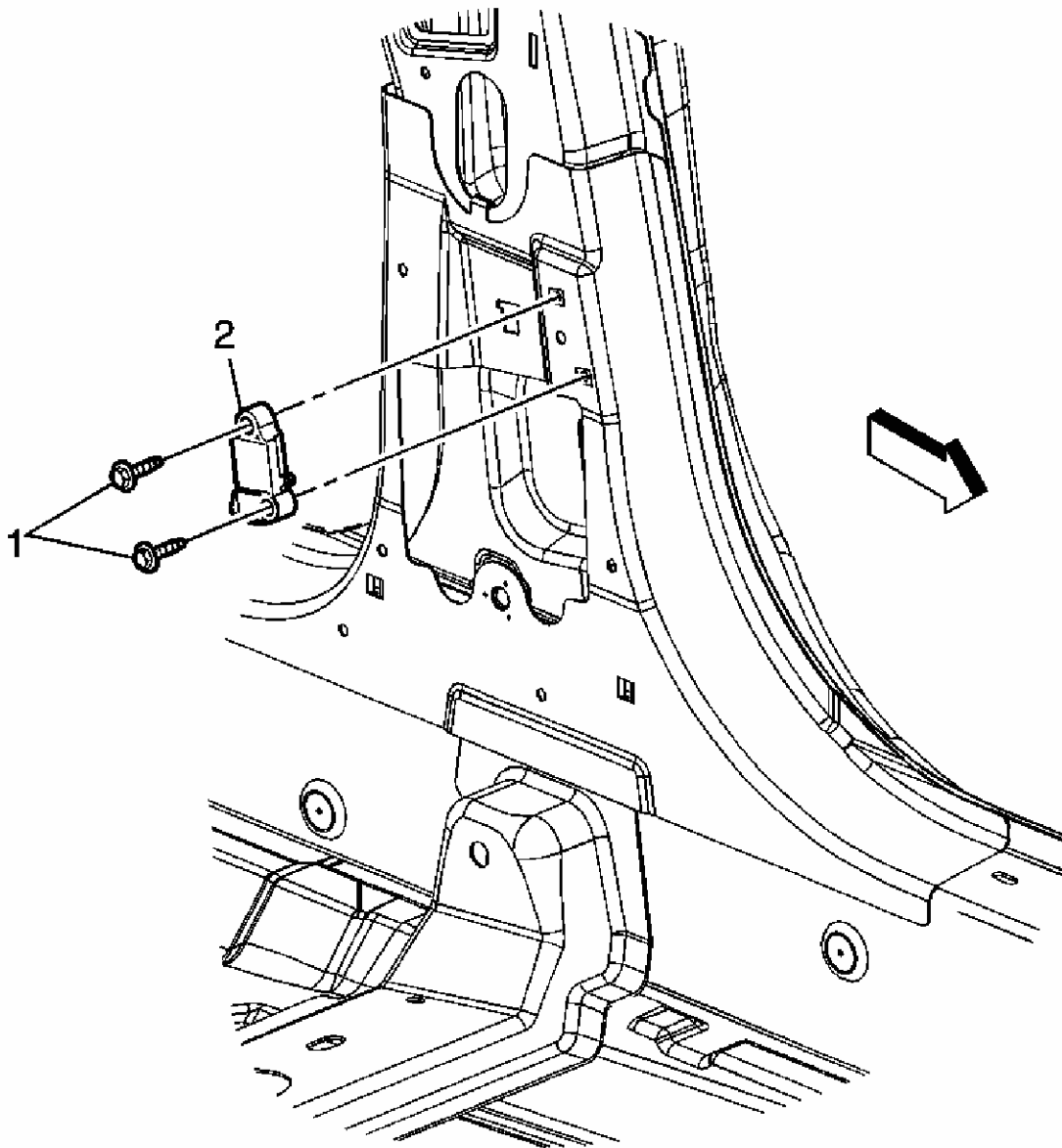


**Fig. 38: Identifying Inflatable Restraint Front End Sensor**  
Courtesy of **GENERAL MOTORS CORP.**

## Inflatable Restraint Front End Sensor Replacement

Callout	Component Name
<b>CAUTION:</b> Do not strike or jolt the inflatable restraint front end sensor. Before applying power to the front end sensor make sure that it is securely fastened. Failure to observe the correct installation procedure could cause SIR deployment, personal injury or unnecessary SIR system repairs.	
<b>Preliminary Procedures</b> <ul style="list-style-type: none"> <li>• Disable the supplemental inflatable restraint (SIR) system. Refer to <b><u>SIR Disabling and Enabling</u></b>.</li> <li>• Remove the lower air deflector. Refer to <b><u>Front Air Deflector Replacement</u></b>.</li> <li>• Unclip the brake lines from the frame.</li> <li>• Unbolt the brake pressure modulator valve bracket from the frame and reposition to access the sensor bolts. DO NOT DISCONNECT BRAKE LINES. Refer to <b><u>Brake Pressure Modulator Valve Bracket Replacement</u></b>.</li> </ul>	
1	Forward Discriminating Sensor Bolt (Qty: 2)  <b>NOTE:</b> Refer to <b><u>Fastener Notice</u></b> .  <b>Tip:</b> Loosen the bolts in order to remove the sensor.  <b>Tighten:</b> 8 N.m (71 lb in)
2	Forward Discriminating Sensor <b>Tip:</b> <ol style="list-style-type: none"> <li>1. Remove the connector position assurance (CPA) retainer.</li> <li>2. Disconnect the electrical connector.</li> </ol>

## INFLATABLE RESTRAINT SIDE IMPACT SENSOR REPLACEMENT



**Fig. 39: Identifying Inflation Restraint Side Impact Sensor**  
 Courtesy of GENERAL MOTORS CORP.

### Inflation Restraint Side Impact Sensor Replacement

Callout	Component Name
<b>CAUTION:</b> When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to <b>SIR Disabling and Enabling</b> . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury or unnecessary SIR system repairs.	
<b>CAUTION:</b> Do not strike or jolt the inflatable restraint side impact sensor (SIS). Before applying power to the SIS make sure that it is securely fastened. Failure to observe the correct installation	

procedures could cause SIR deployment, personal injury or unnecessary SIR system repairs.

### Preliminary Procedures

1. Disable the SIR. Refer to **SIR Disabling and Enabling** or **SIR Disabling and Enabling**.
2. Remove the center pillar upper trim panel assembly. Refer to **Center Pillar Upper Garnish Molding Replacement** .
3. Remove the center pillar lower trim panel. Refer to **Center Pillar Lower Garnish Molding Replacement** .

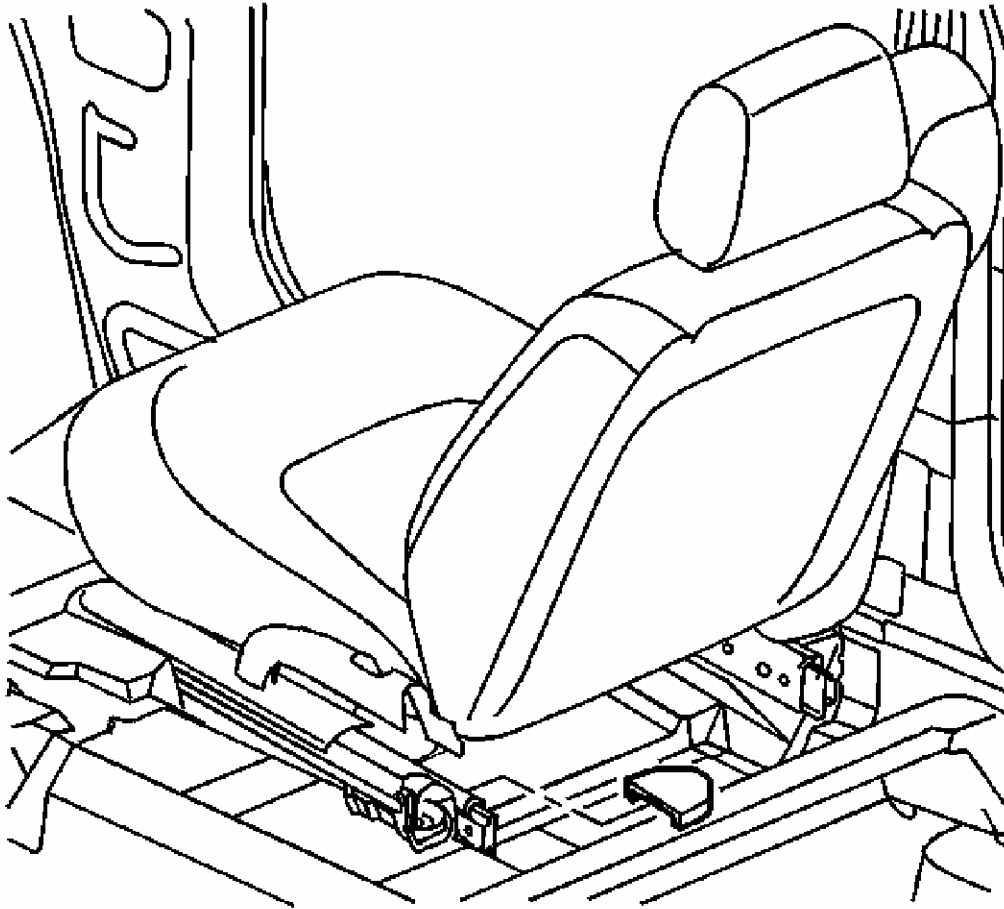
1	Inflatable Restraint Side Impact Sensor Assembly Bolt (Qty: 2)  <b>NOTE:</b> Refer to <u><b>Fastener Notice</b></u> .  <b>Tighten:</b> 9 N.m (80 lb in)
2	Inflatable Restraint Side Impact Sensor Assembly

### INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE REPLACEMENT (AG1/AG2)

#### Removal Procedure

**CAUTION:** Do not strike or jolt the inflatable restraint sensing and diagnostic module (SDM). Before applying power to the SDM, make sure that it is securely fastened with the arrow facing toward the front of the vehicle. Failure to observe the correct installation procedure could cause SIR deployment, personal injury or unnecessary SIR system repairs.

1. Disable the SIR system. Refer to **SIR Disabling and Enabling**.

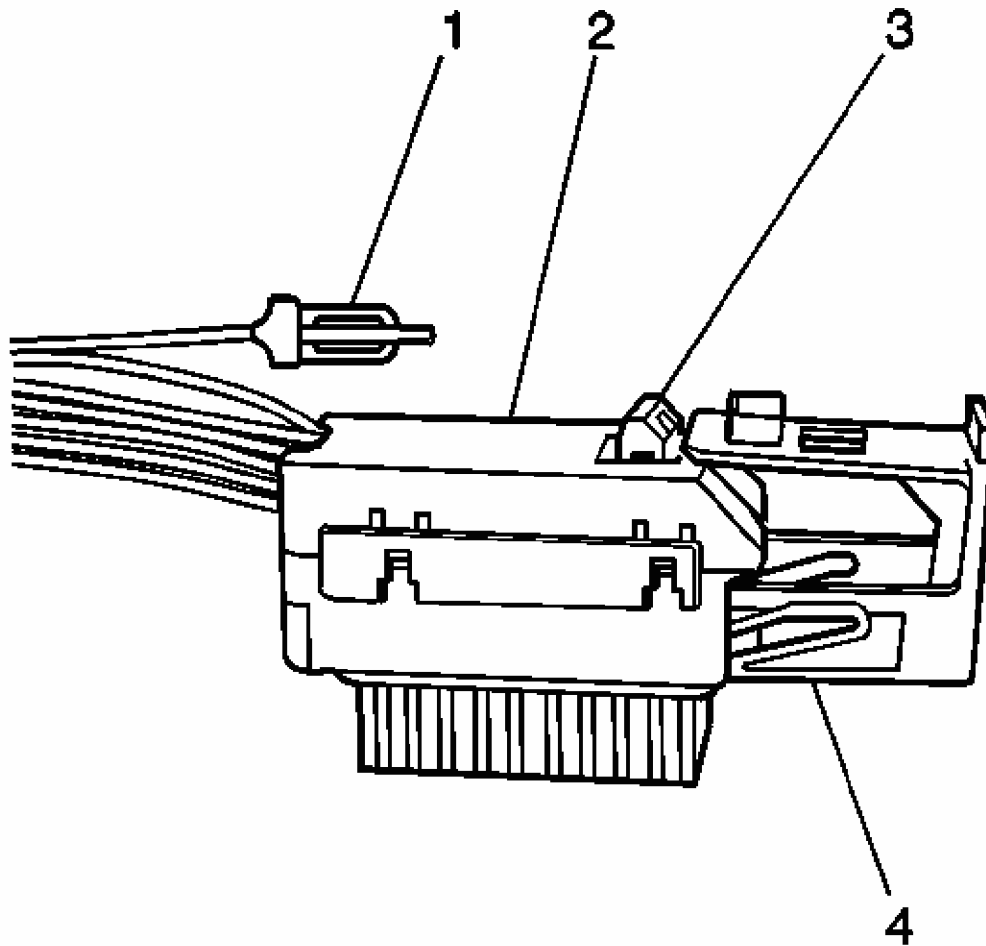


**Fig. 40: View Of Passenger Seat**  
**Courtesy of GENERAL MOTORS CORP.**

2. Move both driver and passenger seat forward and/or to the rear in order to gain access to console fasteners.
3. Remove the console. Refer to **Console Replacement** in Instrument Panel, Gages and Console.

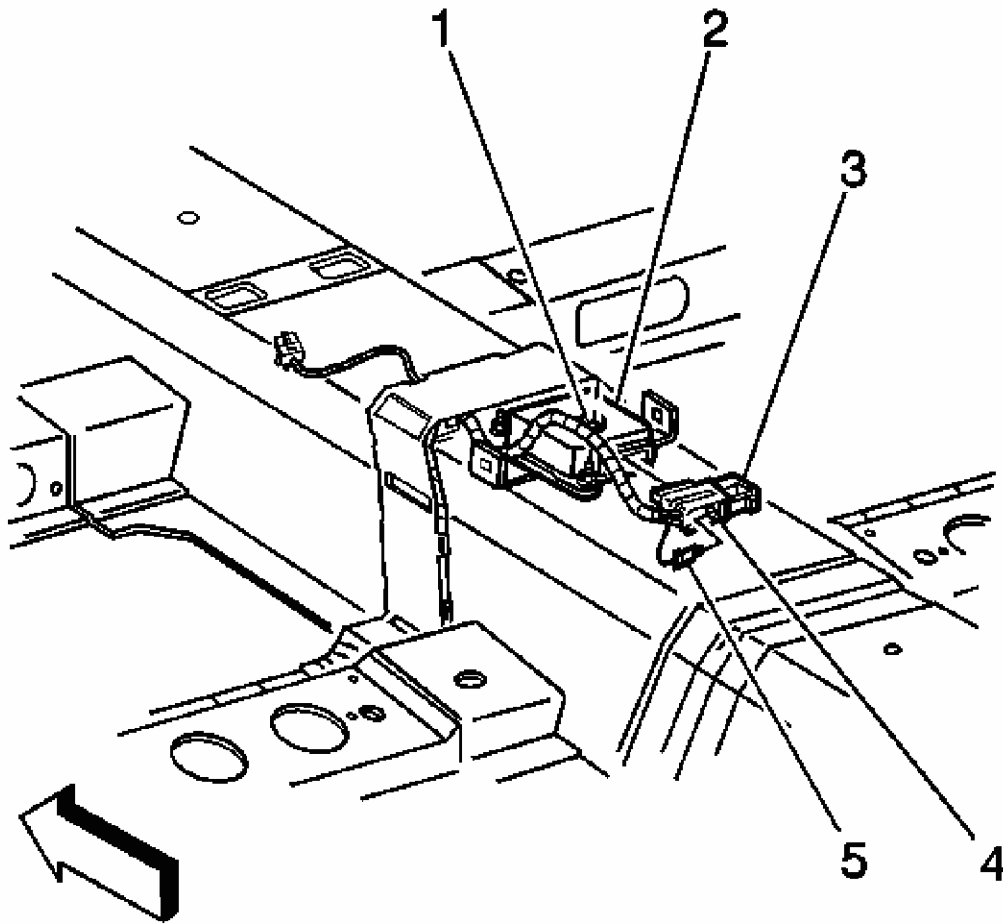
When the console is removed the carpet will be pre-slit in order to provide access to the inflatable restraint sensing and diagnostic module (SDM).





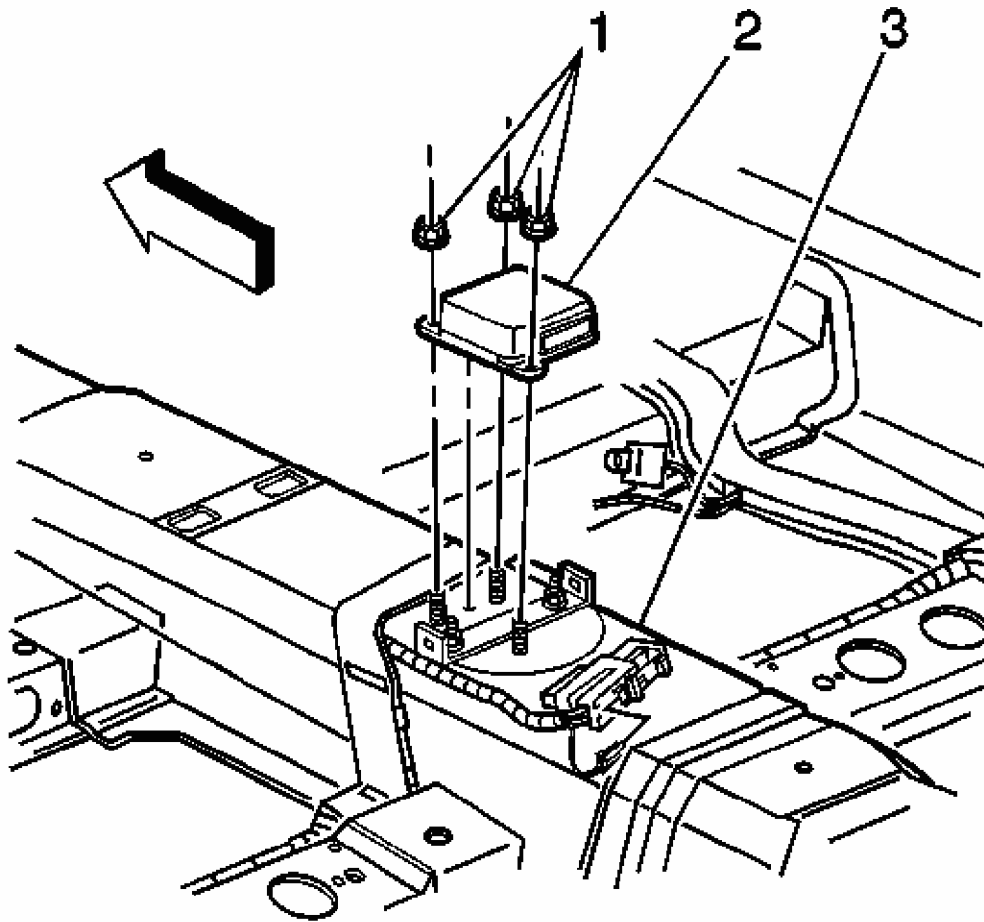
**Fig. 41: View Of Connector Position Assurance (CPA) Flex Lock Button**  
**Courtesy of GENERAL MOTORS CORP.**

4. Remove the connector position assurance (CPA) (1) from the inflatable restraint SDM wiring harness connector (2).
5. Push down flex lock button (3) and then move sliding connector locking cover (4) to the open position.



**Fig. 42: View of DM Wiring Harness Connector, SDM & Push-On Clip**  
**Courtesy of GENERAL MOTORS CORP.**

6. Remove push-on clip (1) securing SDM wiring harness to console stud.
7. Disconnect the SDM wiring harness connector (3) from the SDM (2).

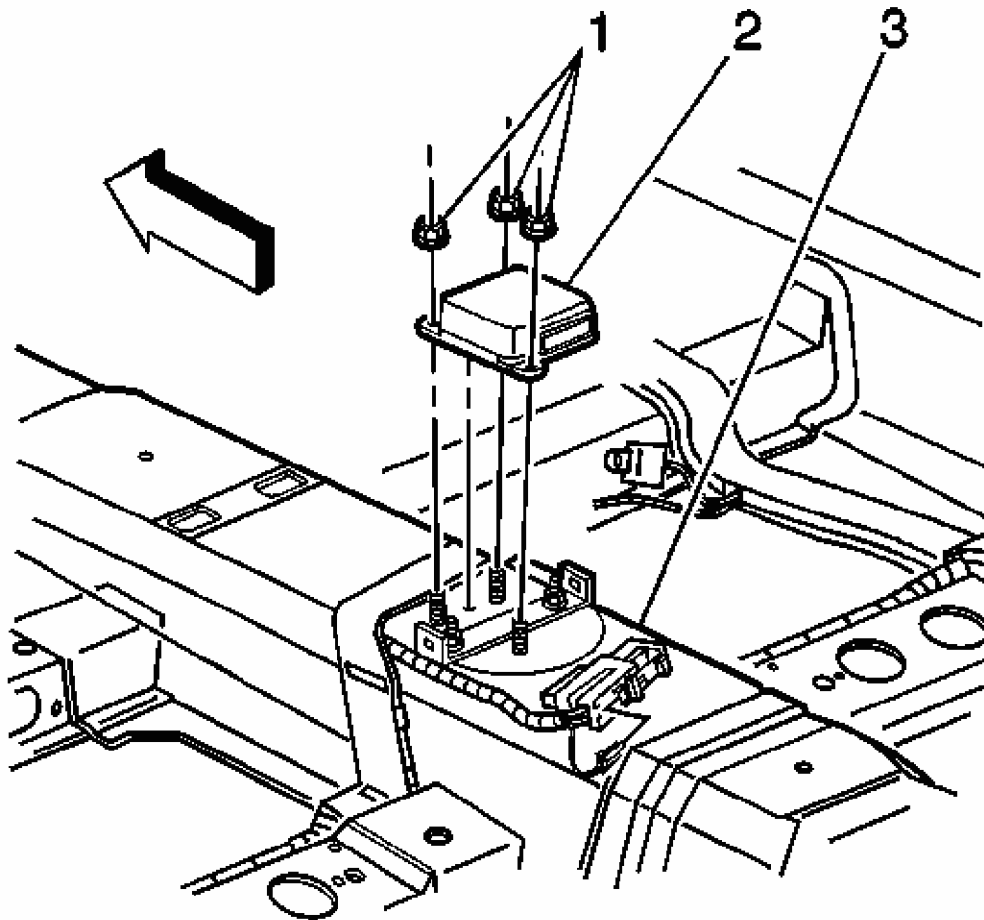


**Fig. 43: View of SDM Mounting Fasteners, SDM and Console Floor**  
**Courtesy of GENERAL MOTORS CORP.**

8. Remove the SDM mounting fasteners (1).
9. Remove the SDM (2) from the console floor (3).

**Installation Procedure**

1. Remove any dirt, grease or other impurities from the mounting surface.



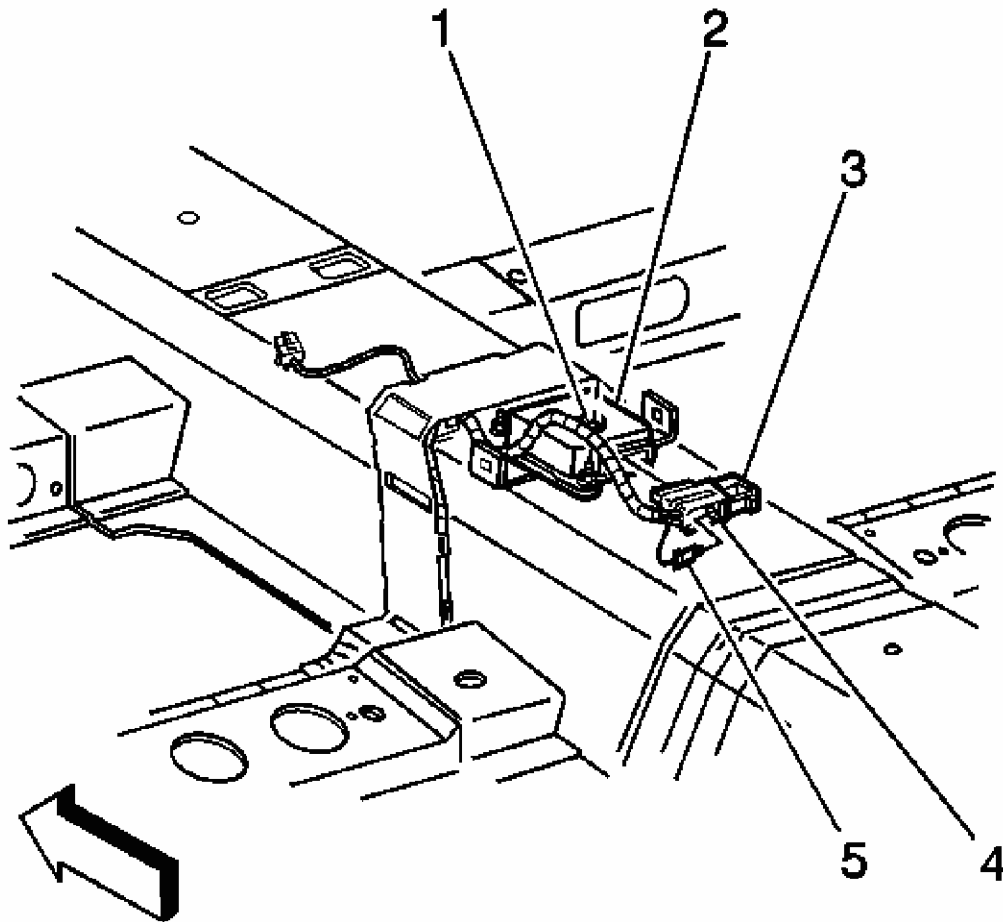
**Fig. 44: View of SDM Mounting Fasteners, SDM and Console Floor**  
Courtesy of GENERAL MOTORS CORP.

2. Install the SDM (2) horizontally to console floor (3).
3. Point the arrow on the SDM toward the front of the vehicle.

**NOTE:** Refer to Fastener Notice in Cautions and Notices.

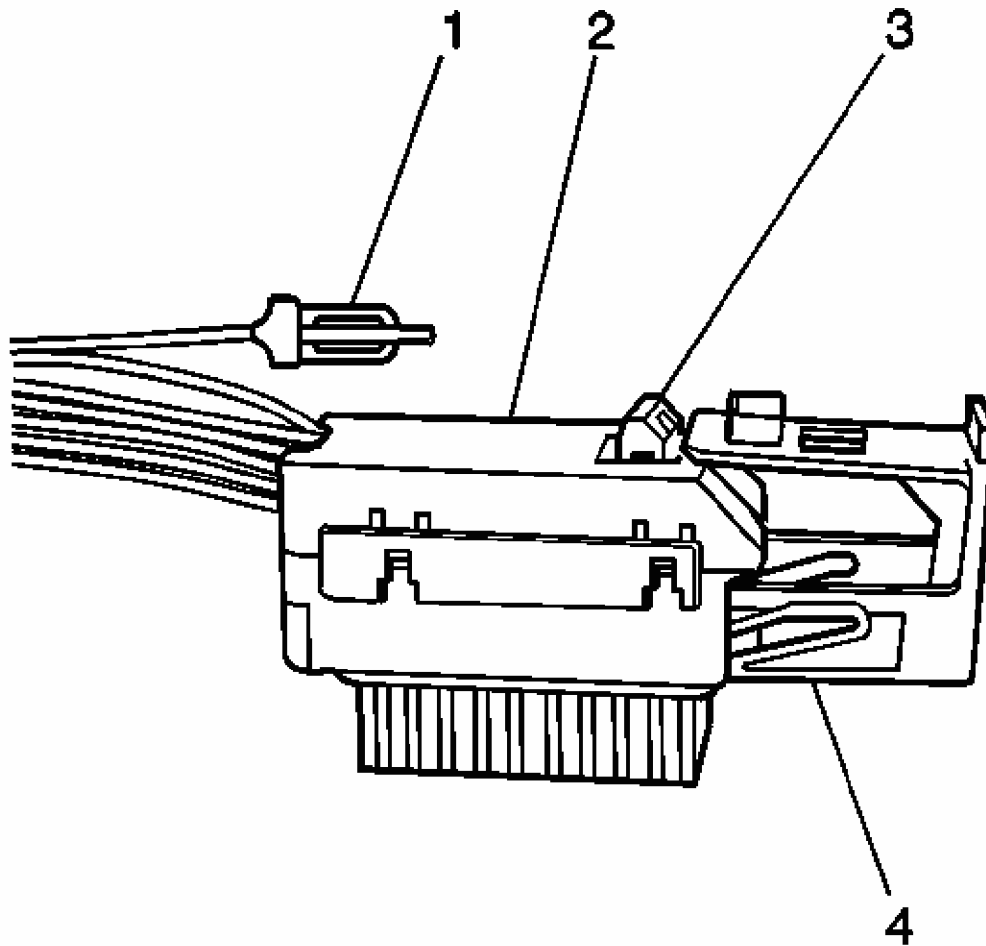
4. Install the SDM mounting fasteners (1).

**Tighten:** Tighten the fasteners to 9 N.m (80 lb in).



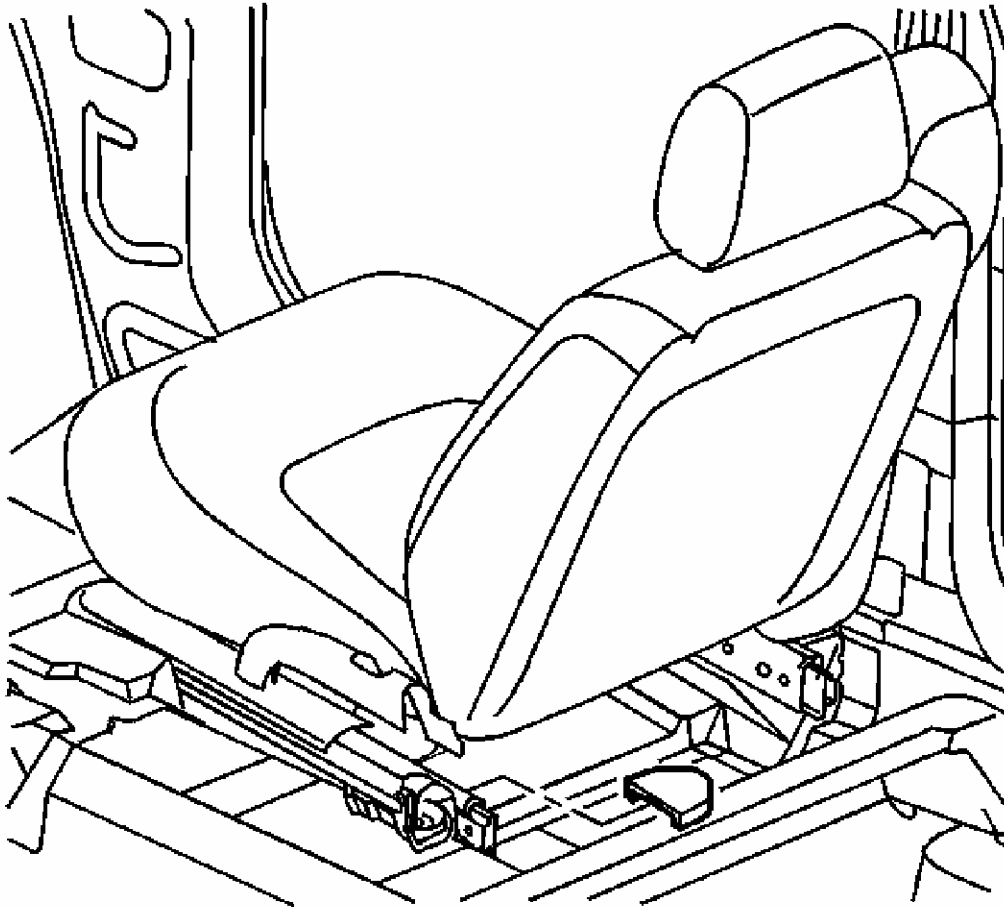
**Fig. 45: View of DM Wiring Harness Connector, SDM & Push-On Clip**  
**Courtesy of GENERAL MOTORS CORP.**

5. Connect the SDM wiring harness connector (3) to the SDM (2).
6. Install the push-on clip (1) securing the SDM wiring harness to the console stud.



**Fig. 46: View Of Connector Position Assurance (CPA) Flex Lock Button**  
**Courtesy of GENERAL MOTORS CORP.**

7. Push down flex lock button (3) and then move sliding connector locking cover (4) to the close position.
8. Install the CPA (1) to the inflatable restraint SDM wiring harness connector (2).



**Fig. 47: View Of Passenger Seat**  
**Courtesy of GENERAL MOTORS CORP.**

9. Install the carpet pre-slit to the close position covering the inflatable restraint SDM.
10. Install the console. Refer to **Console Replacement** in Instrument Panel, Gages and Console.
11. Position the driver and passenger seats to the original positions.
12. Enable the SIR system. Refer to **SIR Disabling and Enabling**.

**IMPORTANT:** The AIR BAG indicator may remain ON after the SDM has been replaced. DTC B1001 may set requiring the SDM part number to be set in multiple modules. If the indicator remains ON after enabling the SIR system, perform the diagnostic system check and follow the steps thoroughly to ensure that the SDM is set properly.

13. Program the new SDM into the dash integration module (DIM). Refer to **Body Control Module (BCM) Programming/RPO Configuration** in Computer/Integrating Systems.
14. Refer to **Control Module References** for programming and setup information.

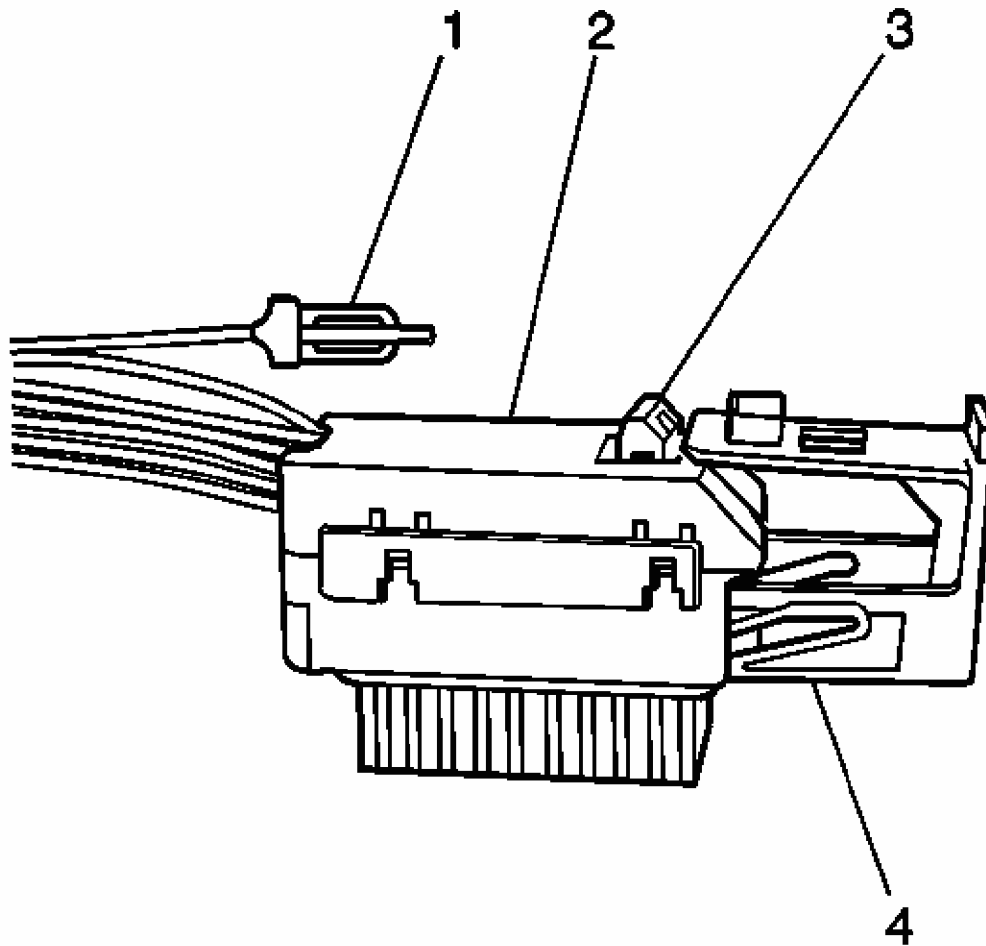
#### **INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE REPLACEMENT (AM6) (AM6)**

##### **Removal Procedure**

**CAUTION:** Do not strike or jolt the inflatable restraint sensing and diagnostic module (SDM). Before applying power to the SDM, make sure that it is securely fastened with the arrow facing toward the front of the vehicle. Failure to observe the correct installation procedure could cause SIR deployment, personal injury or unnecessary SIR system repairs.

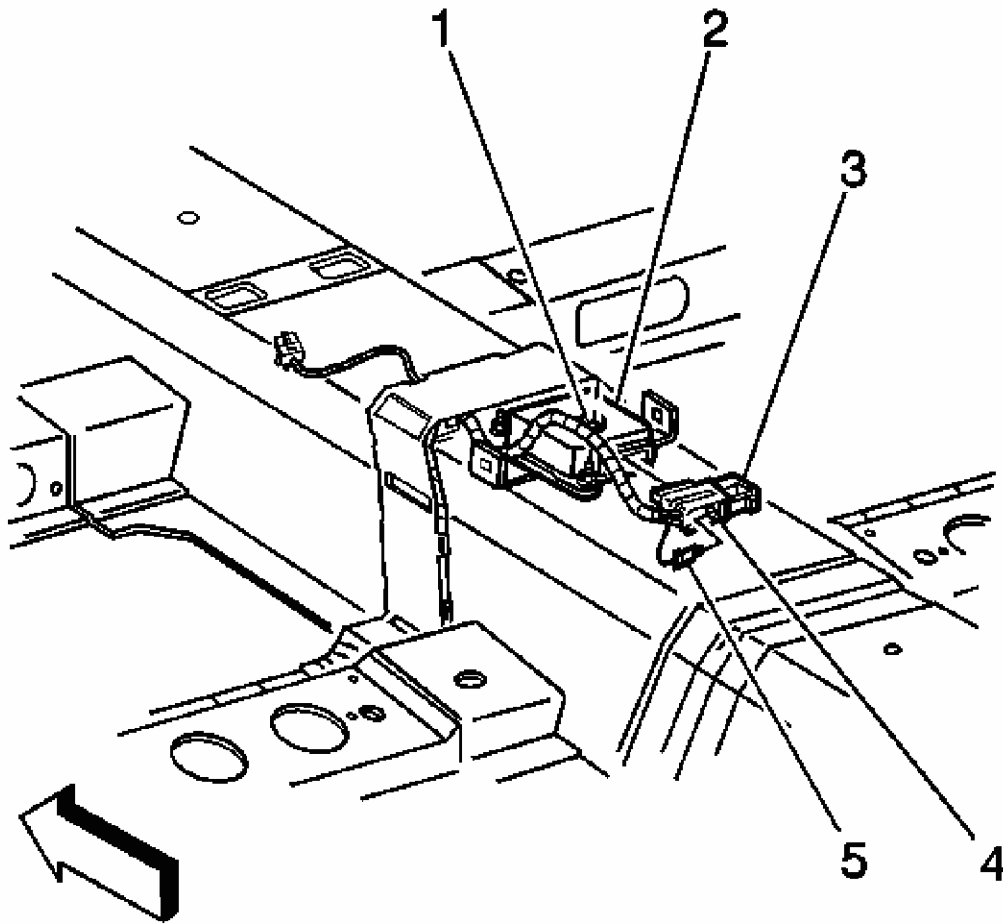
1. Disable the SIR system. Refer to, **SIR Disabling and Enabling**.
2. Remove the front seat. Refer to **Seat Replacement** .
3. Remove the rear carpet from vehicle. Refer to **Rear Floor Panel Carpet Replacement** .





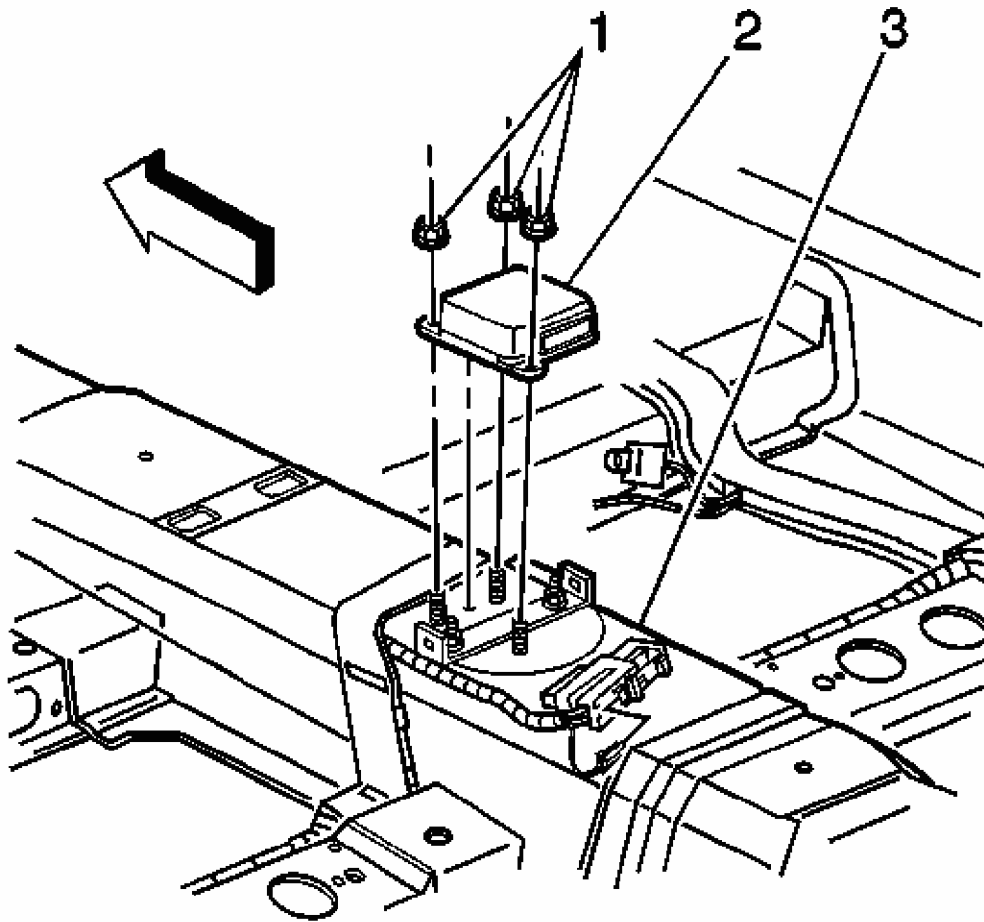
**Fig. 48: View Of Connector Position Assurance (CPA) Flex Lock Button**  
**Courtesy of GENERAL MOTORS CORP.**

4. Remove the connector position assurance (CPA) (1) from the inflatable restraint sensing and diagnostic module (SDM) wiring harness connector (2).
5. Push down flex lock button (3) and then move sliding connector locking cover (4) to the open position.



**Fig. 49: View of DM Wiring Harness Connector, SDM & Push-On Clip**  
**Courtesy of GENERAL MOTORS CORP.**

6. Remove the push-on clip (1) securing the SDM wiring harness to the console stud.
7. Disconnect the SDM wiring harness connector (3) from the SDM (2).

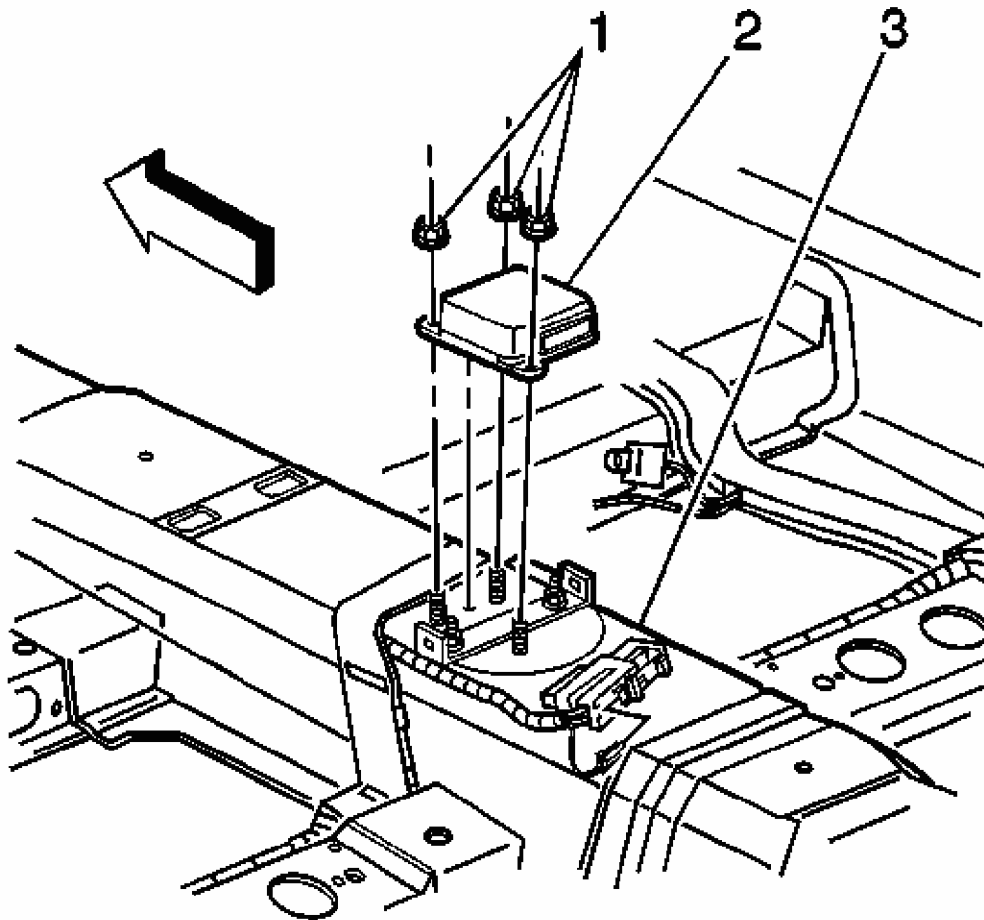


**Fig. 50: View of SDM Mounting Fasteners, SDM and Console Floor**  
**Courtesy of GENERAL MOTORS CORP.**

8. Remove the SDM mounting fasteners (1).
9. Remove the SDM (2) from the console floor (3).

**Installation Procedure**

1. Remove any dirt, grease or other impurities from the mounting surface.



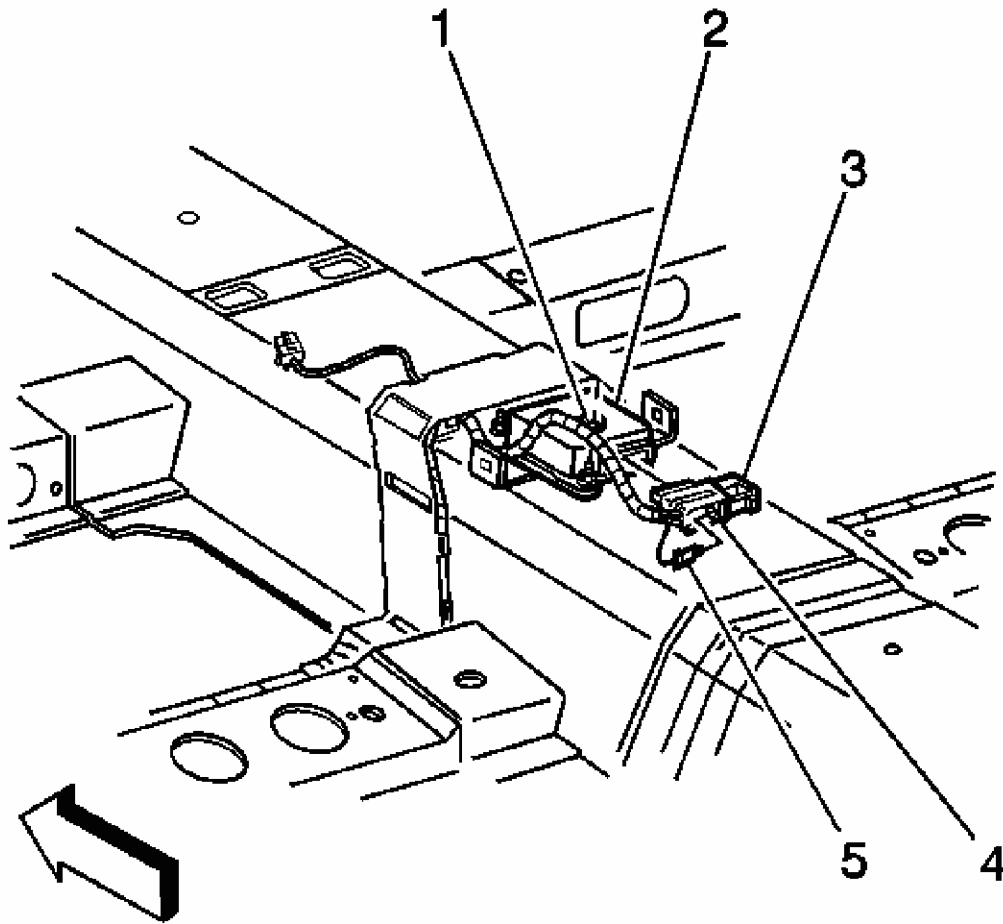
**Fig. 51: View of SDM Mounting Fasteners, SDM and Console Floor**  
**Courtesy of GENERAL MOTORS CORP.**

2. Install the SDM (2) horizontally to console floor (3).
3. Point the arrow on the SDM toward the front of the vehicle.

**NOTE:** Refer to Fastener Notice .

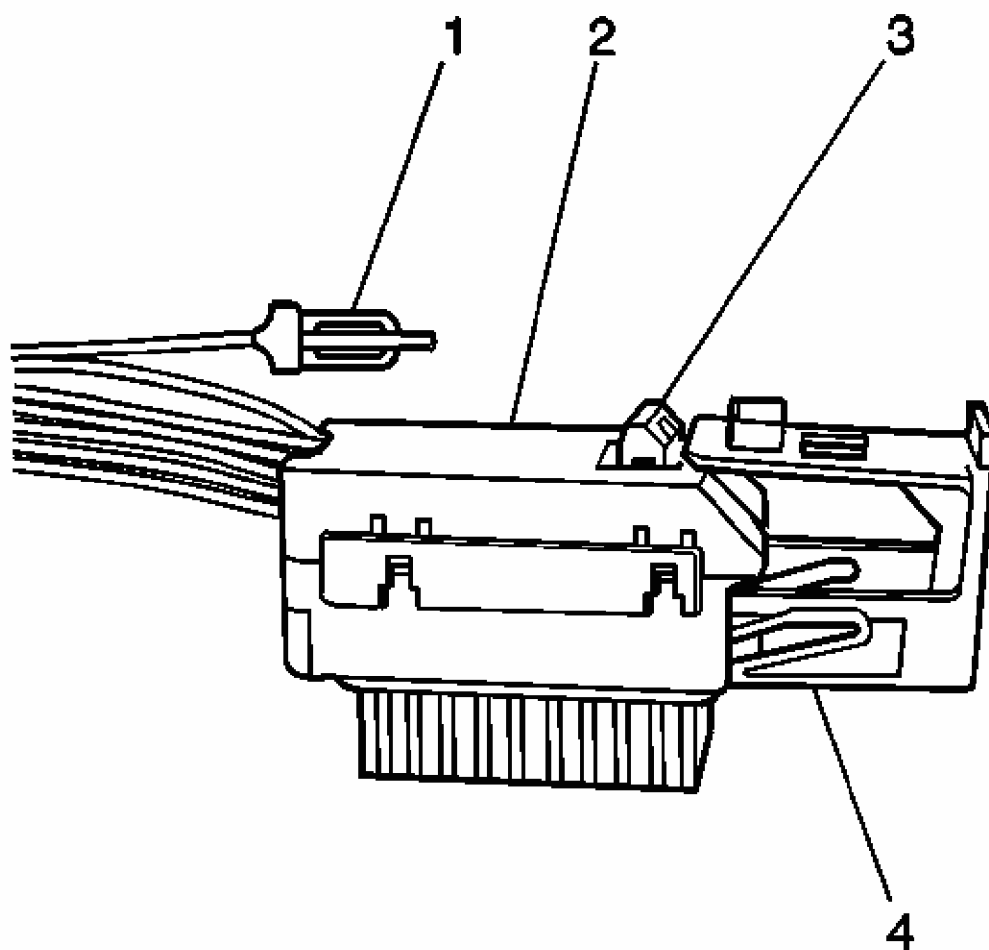
4. Install the SDM mounting fasteners (1).

**Tighten:** Tighten the fasteners to 9 N.m (80 lb in).



**Fig. 52: View of DM Wiring Harness Connector, SDM & Push-On Clip**  
**Courtesy of GENERAL MOTORS CORP.**

5. Connect the SDM wiring harness connector (3) to the SDM (2).
6. Install the push-on clip (1) securing the SDM wiring harness to the console stud.



**Fig. 53: View Of Connector Position Assurance (CPA) Flex Lock Button**  
Courtesy of GENERAL MOTORS CORP.

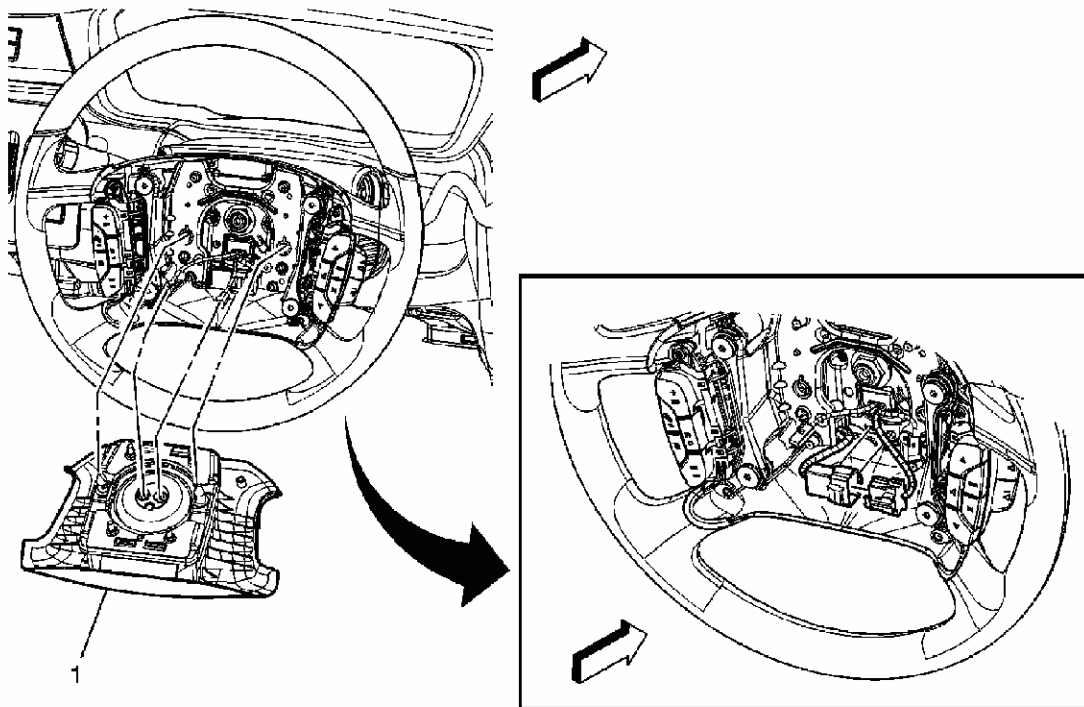
7. Push down flex lock button (3) and then move sliding connector locking cover (4) to the close position.
8. Install the CPA (1) to the inflatable restraint SDM wiring harness connector (2).
9. Install the rear carpet into vehicle. Refer to **Rear Floor Panel Carpet Replacement** .
10. Install the front split bench seat. Refer to **Seat Replacement** .
11. Enable the SIR system. Refer to, **SIR Disabling and Enabling**.

**IMPORTANT:** The AIR BAG indicator may remain ON after the SDM has been replaced. DTC B1001 may set requiring the SDM part number to be set in multiple modules. If the indicator

remains ON after enabling the SIR system, perform the diagnostic system check and follow the steps thoroughly to ensure that the SDM is set properly.

12. Program the new SDM into the dash integration module (DIM). Refer to **Body Control Module (BCM) Programming/RPO Configuration** .
13. Refer to **Control Module References** for programming and setup information.

#### INFLATABLE RESTRAINT STEERING WHEEL MODULE REPLACEMENT



**Fig. 54: View Of Inflatable Restraint Steering Wheel Module**  
**Courtesy of GENERAL MOTORS CORP.**

#### Inflatable Restraint Steering Wheel Module Replacement

Callout	Component Name
<b>CAUTION:</b> Refer to <b><u>SIR Inflator Module Handling and Storage Caution</u></b> .	
<b>CAUTION:</b> Refer to <b><u>SIR Caution</u></b> .	
<b>Preliminary Procedures</b>	
1. Disable the supplemental inflatable restraint (SIR) system. Refer to <b>SIR Disabling</b>	

**and Enabling.**

2. Locate tool access hole on side of steering wheel.
3. Using a blunt-ended tool, push the spring fastener inward through the access hole. Repeat the step for the other opening.

**Steering Wheel Inflatable Restraint Module**

**Tip:**

1

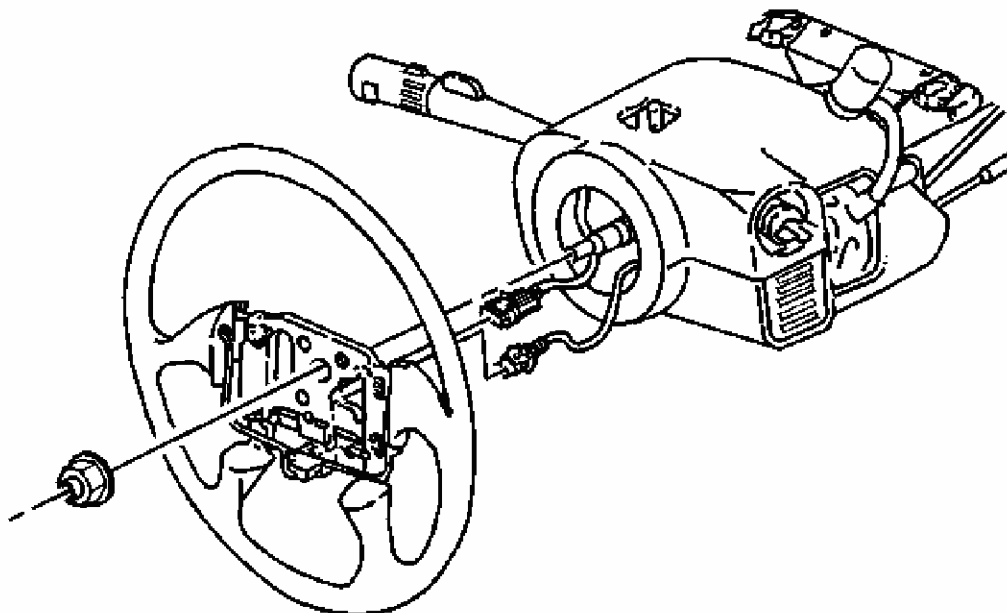
1. Remove the connector position assurance (CPA) retainer.
2. Disconnect the electrical connectors.
3. Fully deploy the module before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to **Inflator Module Handling and Scrapping.**

**INFLATABLE RESTRAINT STEERING WHEEL MODULE COIL REPLACEMENT**

**Tools Required**

**J 42640** Steering Column Anti Rotation Pin

**Removal Procedure**





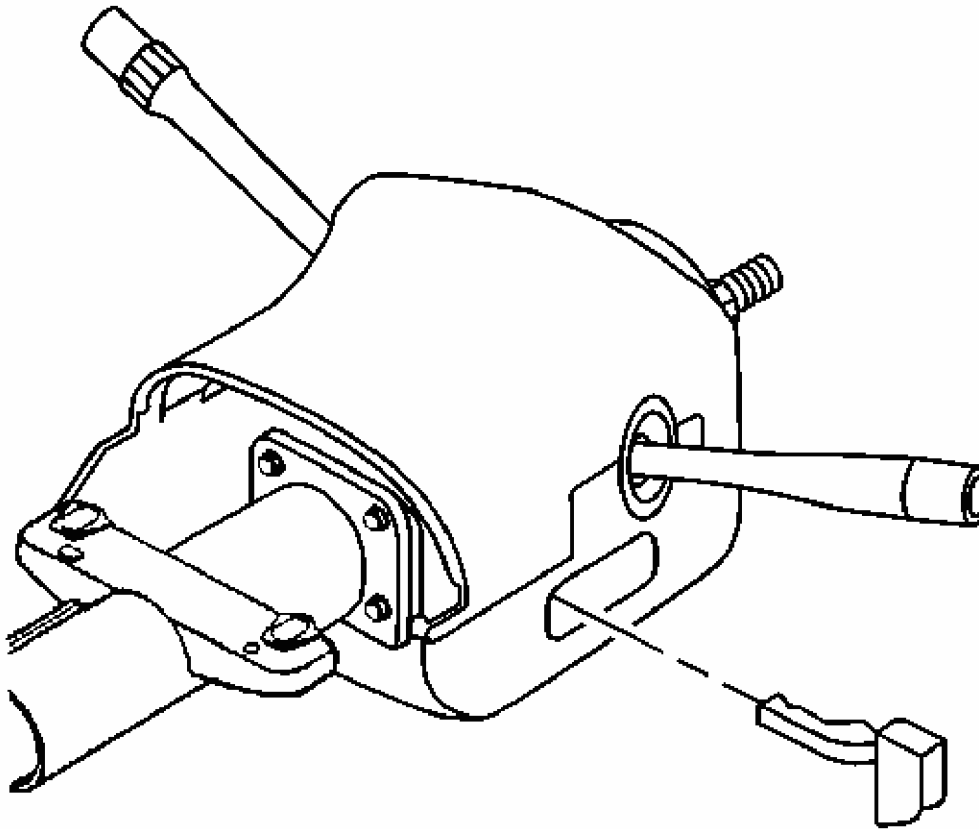
**Fig. 55: Steering Wheel, Shaft & Nut**  
**Courtesy of GENERAL MOTORS CORP.**

**CAUTION:** Refer to SIR Caution in Cautions and Notices.

1. Disable the SIR System. Refer to SIR Disabling and Enabling.

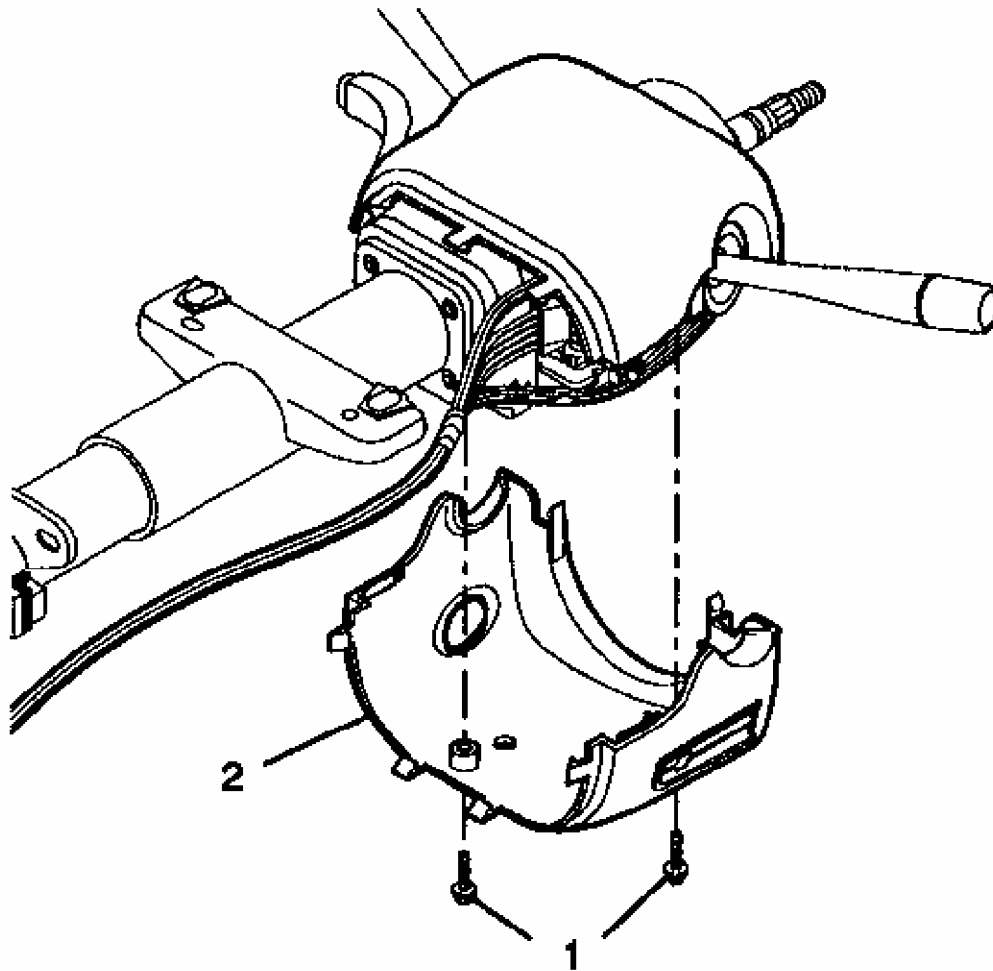
**NOTE:** The wheels of the vehicle must be straight ahead and the steering column in the LOCK position before disconnecting the steering column or intermediate shaft from the steering gear. Failure to do so will cause the SIR coil assembly to become uncentered, which may cause damage to the coil assembly.

2. Verify the following before removing the SIR coil:
  - The wheels on the vehicle are straight ahead.
  - That **J 42640** is installed or the ignition switch is in the LOCK position.
3. Remove the steering wheel from the steering shaft. Refer to Steering Wheel Replacement in Steering Wheel and Column.



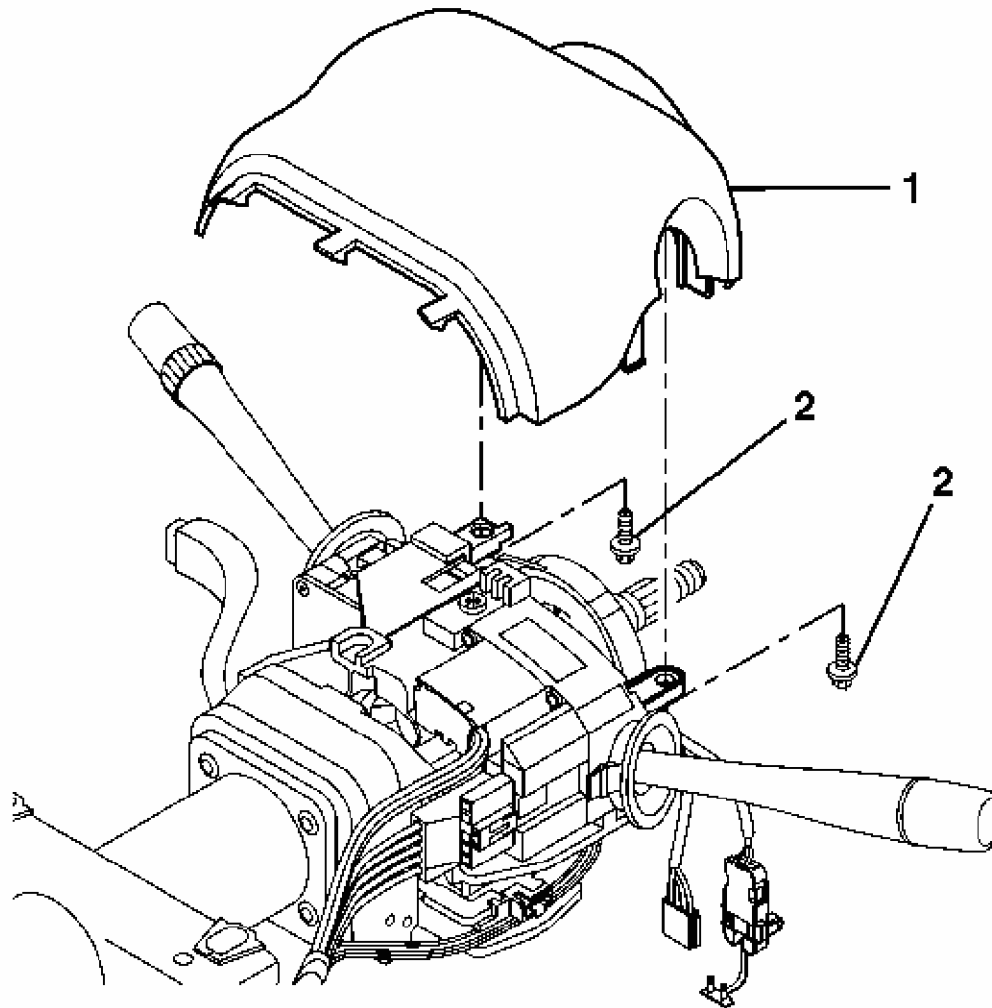
**Fig. 56: Removing/Installing Tilt Lever**  
**Courtesy of GENERAL MOTORS CORP.**

4. On vehicles with a tilt column, pull the tilt lever straight out from the steering column.



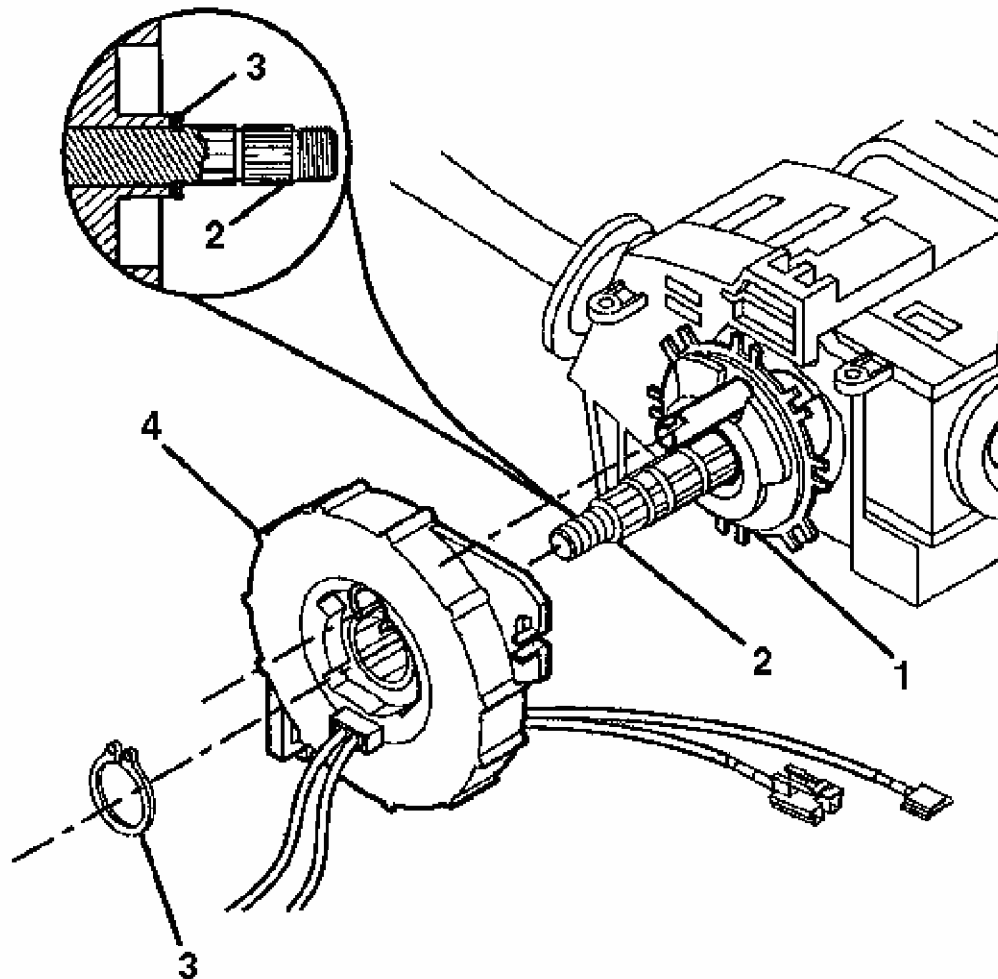
**Fig. 57: Removing/Installing Lower Trim Cover**  
**Courtesy of GENERAL MOTORS CORP.**

5. Remove 2 TORX® head screws (1) from the lower trim cover (2).
6. Remove the lower trim cover (2).



**Fig. 58: Removing/Installing Upper Trim Cover**  
**Courtesy of GENERAL MOTORS CORP.**

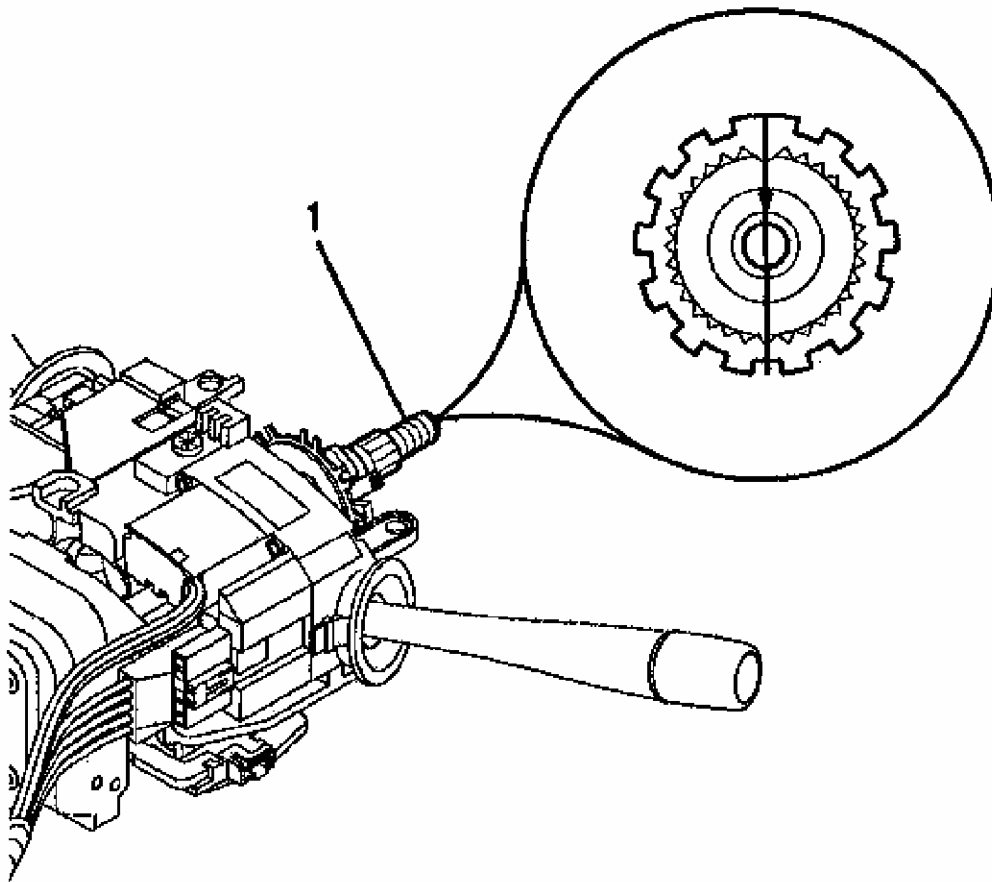
7. Remove 2 TORX® head screws (2) from the upper trim cover (1).
8. Remove the upper trim cover (1).



**Fig. 59: Identifying SIR Coil, Steering Shaft Assembly & Retaining Ring**  
**Courtesy of GENERAL MOTORS CORP.**

9. Remove the wire harness straps from the steering wheel column wire harness.
10. Remove the retaining ring (3).
11. Remove the SIR coil (4) from the steering shaft.
12. If replacing, discard the SIR coil.

**Installation Procedure**



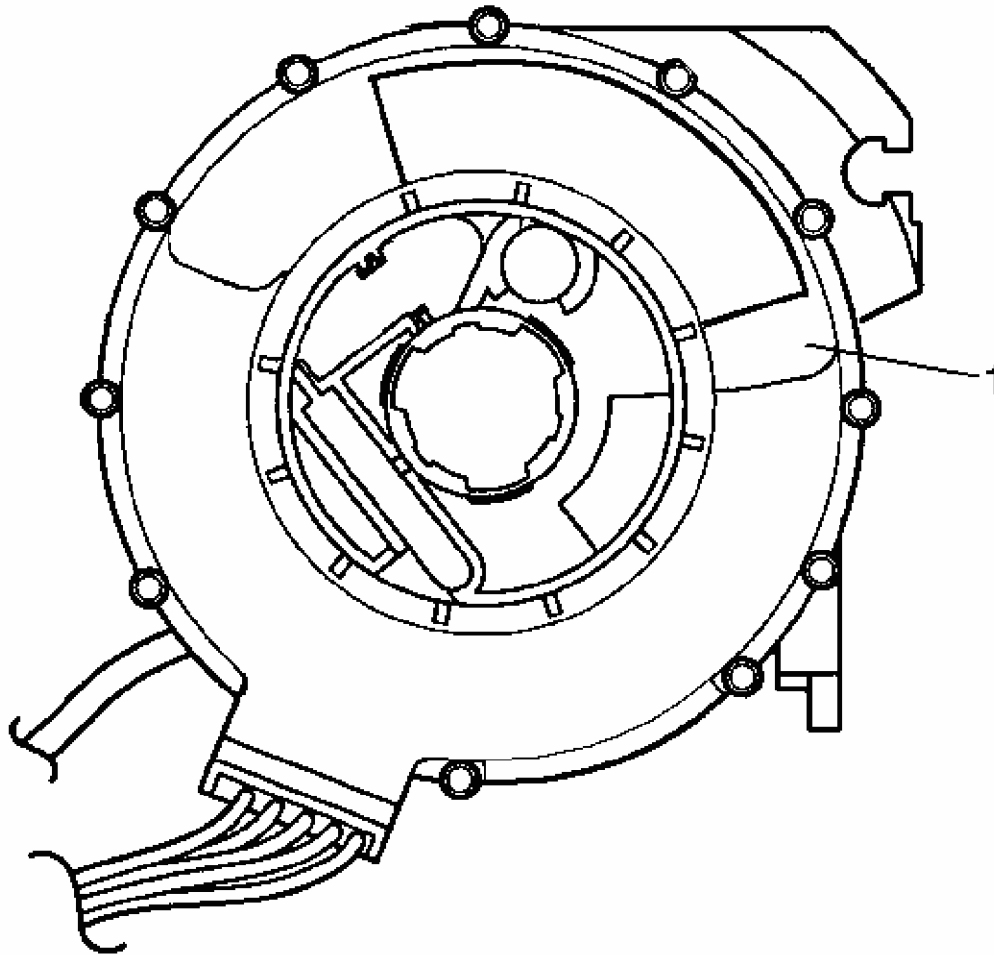
**Fig. 60: View Of Block Tooth Of Steering Shaft Assembly In 12 O'clock Position**  
**Courtesy of GENERAL MOTORS CORP.**

**NOTE:** The new SIR coil assembly will be centered. Improper alignment of the SIR coil assembly may damage the unit, causing an inflatable restraint malfunction.

**NOTE:** The wheels of the vehicle must be straight ahead and the steering column in the LOCK position before disconnecting the steering column or intermediate shaft from the steering gear. Failure to do so will cause the SIR coil assembly to become uncentered, which may cause damage to the coil assembly.

1. Verify the following:

- The wheels on the vehicle are straight ahead.
- That **J 42640** is installed or the ignition switch is in the LOCK position.

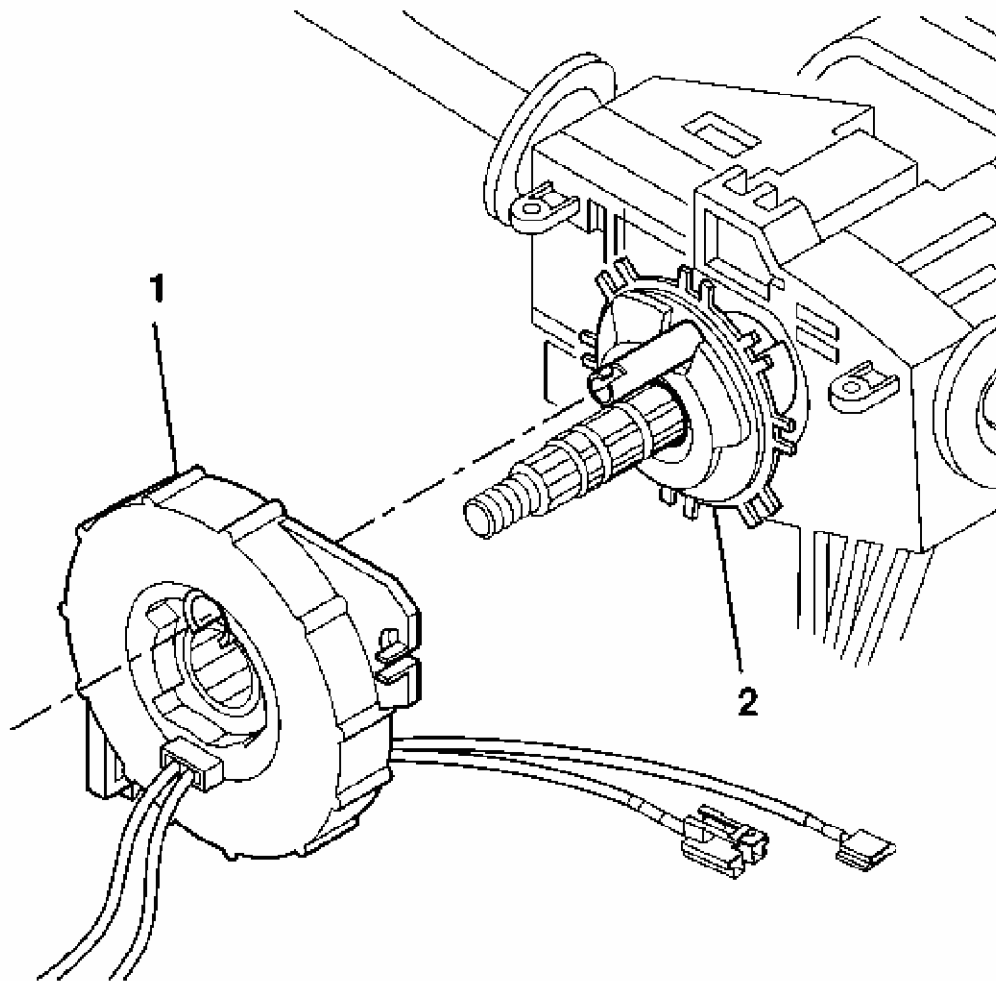


**Fig. 61: View Of SIR Coil**

Courtesy of GENERAL MOTORS CORP.

**IMPORTANT:** Do not remove the centering tab from the new SIR coil until the installation is complete. If the SIR coil does not come with a centering tab, you must center the SIR coil.

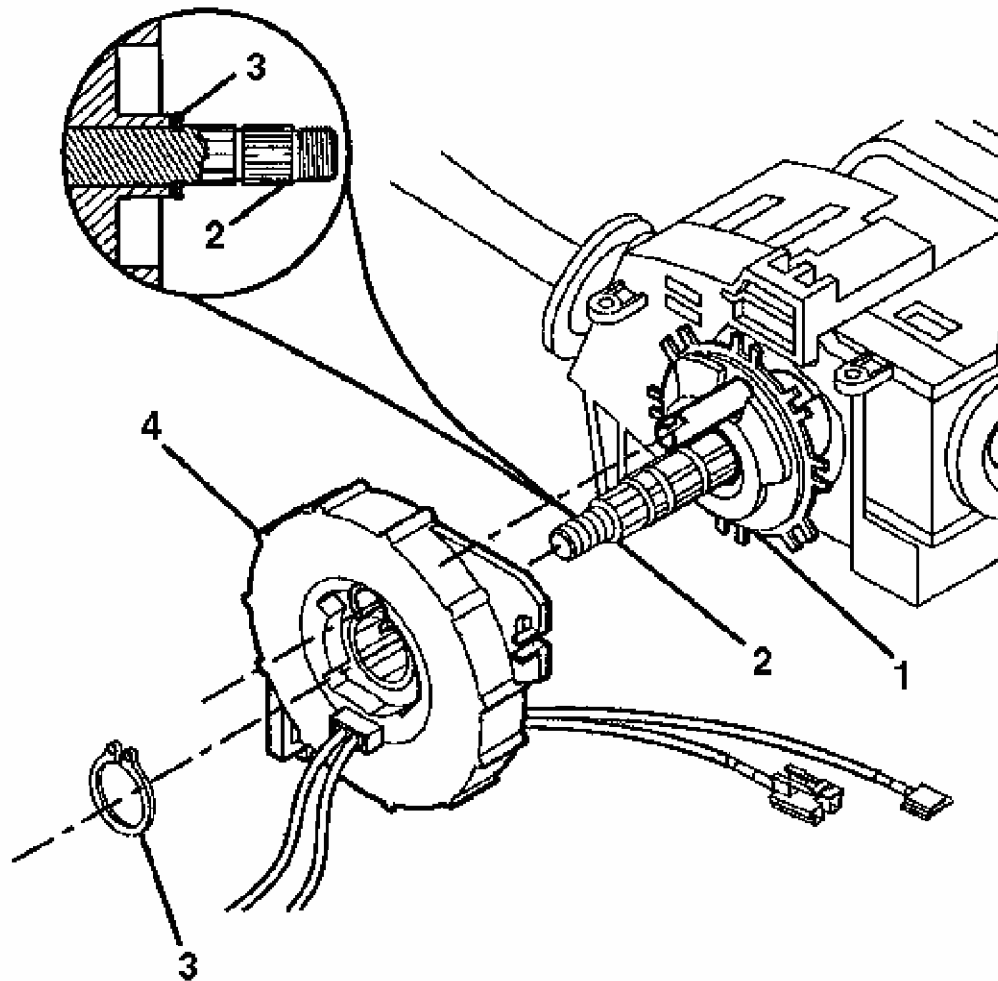
2. If reusing the existing coil it **MUST** be centered, refer to **Inflatable Restraint Steering Wheel Module Coil Centering** in Steering Wheel and Column.



**Fig. 62: Aligning SIR Coil Assembly With Horn Tower**  
**Courtesy of GENERAL MOTORS CORP.**

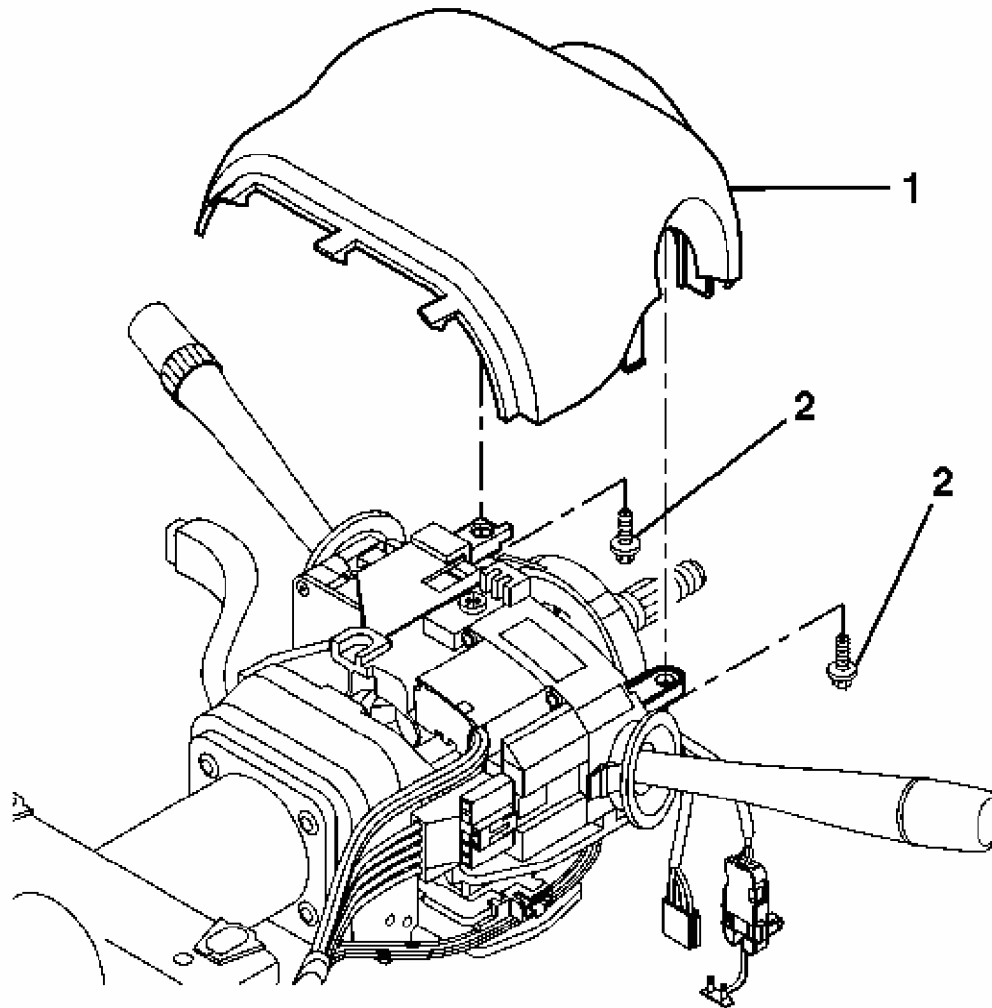
3. Align the SIR coil assembly (1) with the horn tower on the turn signal cancel cam assembly (2).





**Fig. 63: Identifying SIR Coil, Steering Shaft Assembly & Retaining Ring**  
**Courtesy of GENERAL MOTORS CORP.**

4. Slide the SIR coil (4) onto the steering shaft assembly (2).
5. Firmly seat the retaining ring (3) into the groove on the steering shaft assembly (2).
6. Remove and discard the centering tab from the new SIR coil (4).

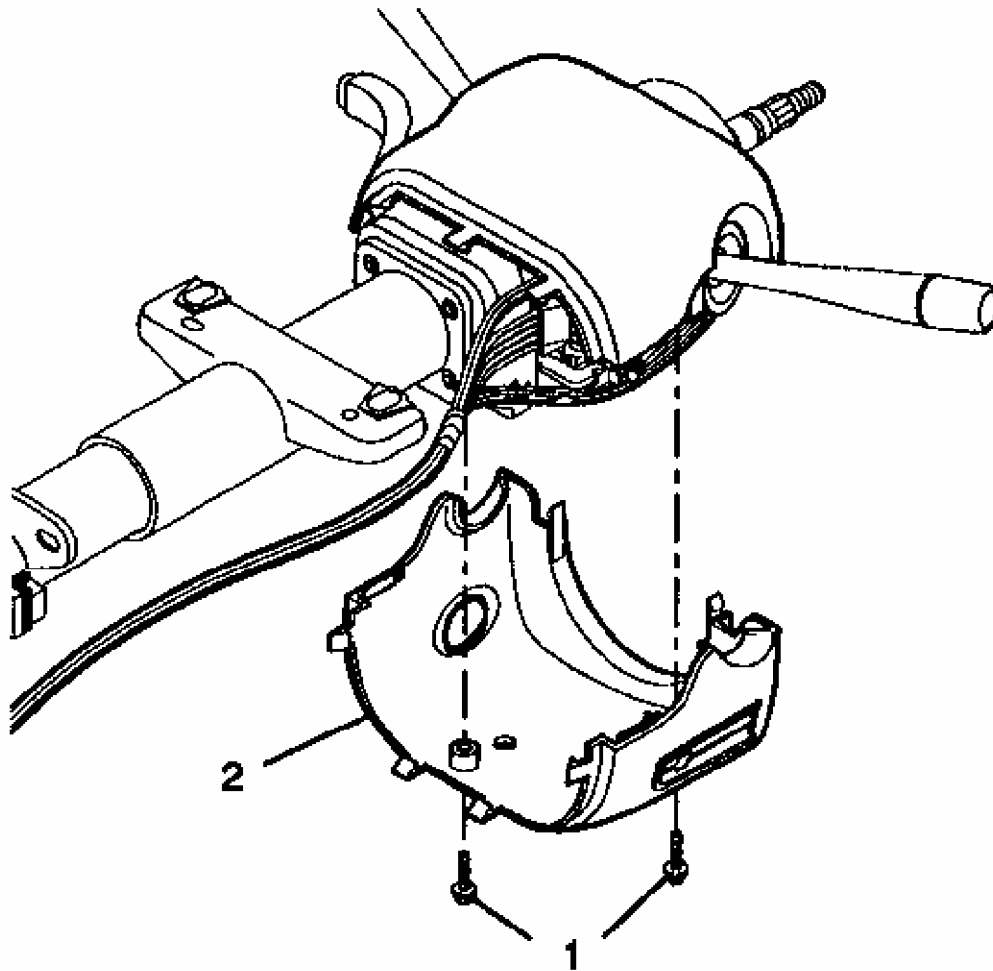


**Fig. 64: Removing/Installing Upper Trim Cover**  
Courtesy of GENERAL MOTORS CORP.

**NOTE:** Refer to Fastener Notice in Cautions and Notices.

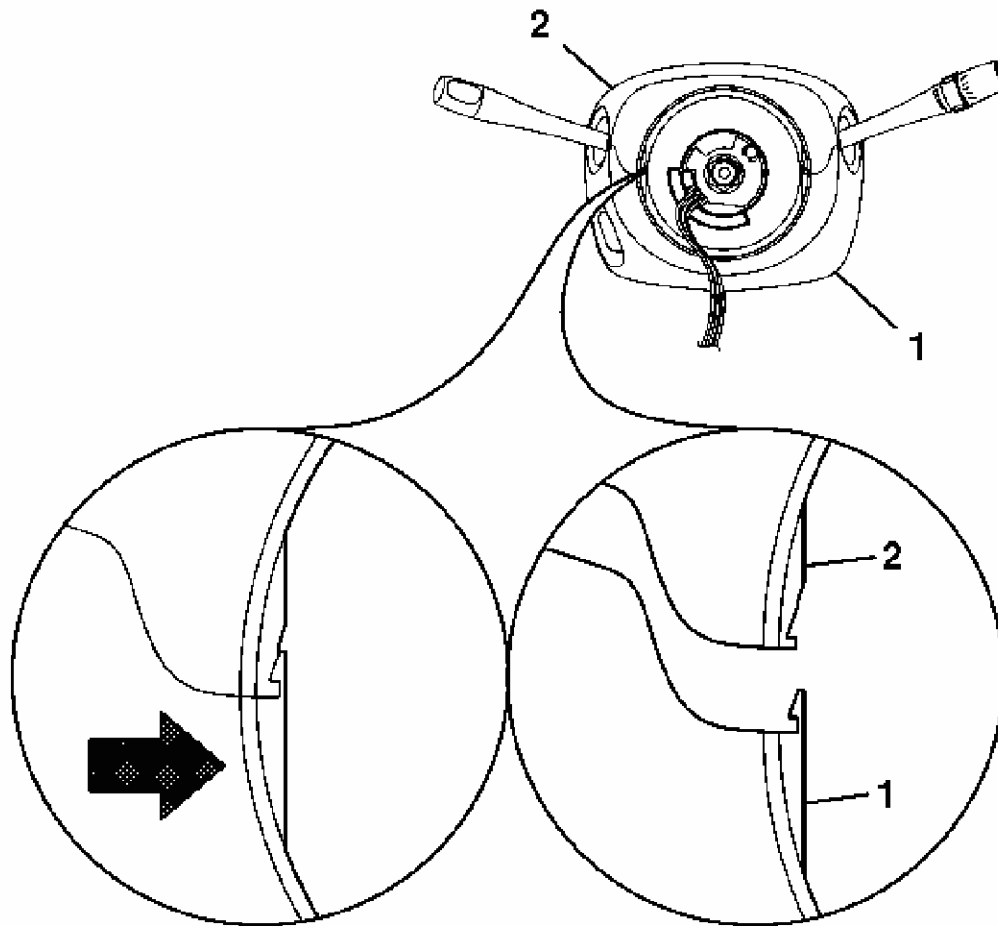
7. Install the upper trim cover (1) and secure by using 2 TORX® head screws (2).

**Tighten:** Tighten the screws to 1.5 N.m (13 lb in).



**Fig. 65: Removing/Installing Lower Trim Cover**  
**Courtesy of GENERAL MOTORS CORP.**

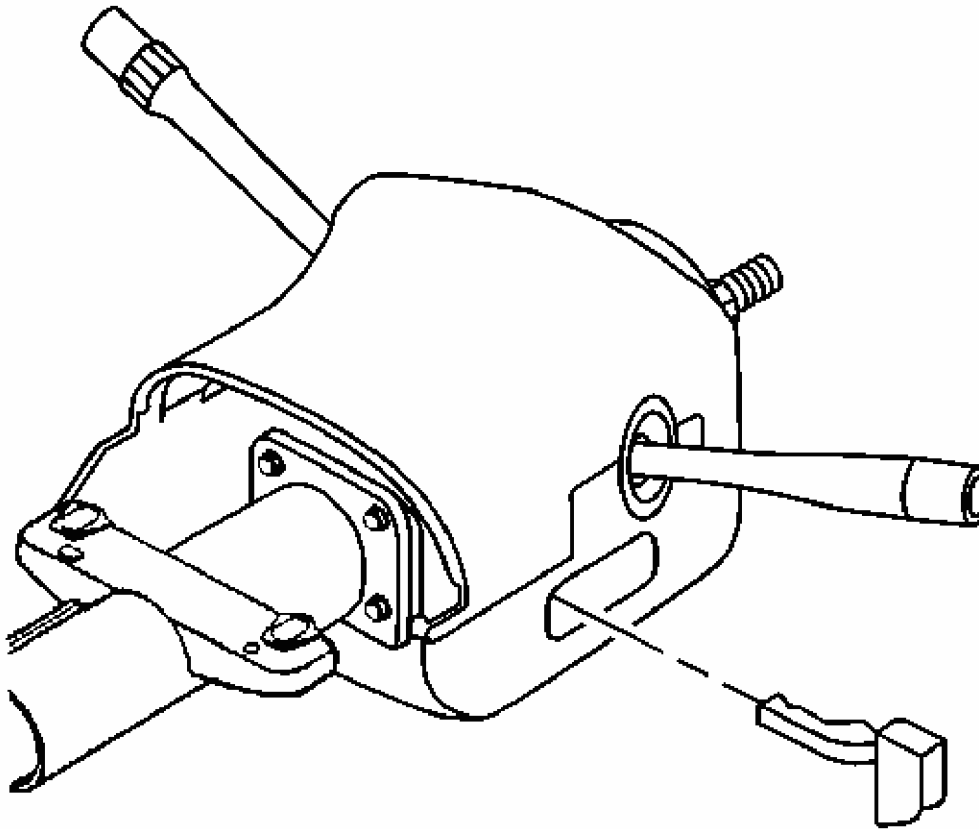
8. Install the lower trim cover (2) and secure by using 2 TORX® head screws (1).



**Fig. 66: Upper & Lower Trim Cover Tabs**  
**Courtesy of GENERAL MOTORS CORP.**

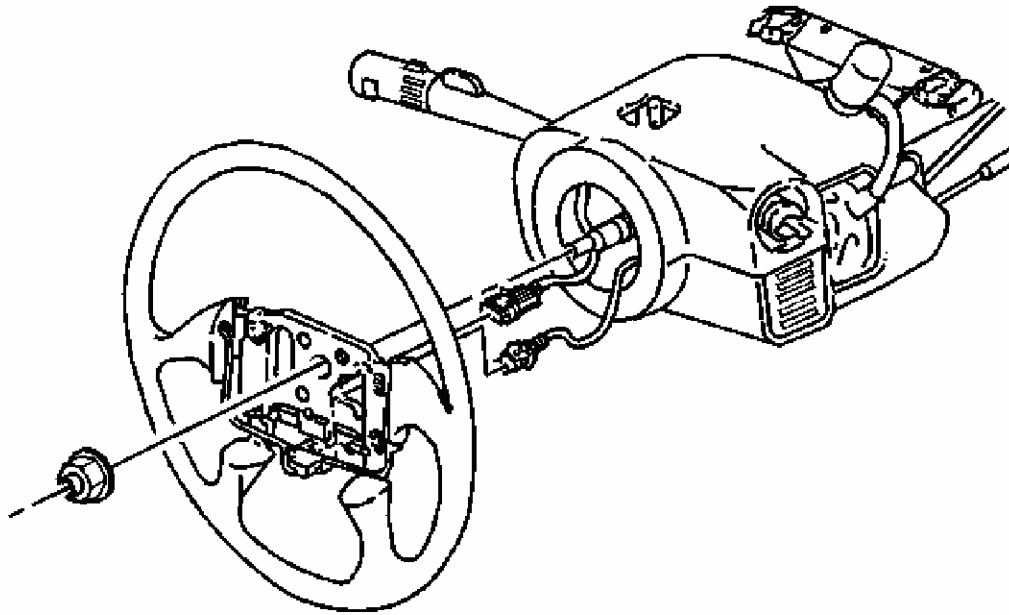
9. Verify that the tabs on the lower trim cover (1) engage with the tabs on the upper trim cover (2). Snap the tabs together.

**Tighten:** Tighten the screws to 1.5 N.m (13 lb in).



**Fig. 67: Removing/Installing Tilt Lever**  
**Courtesy of GENERAL MOTORS CORP.**

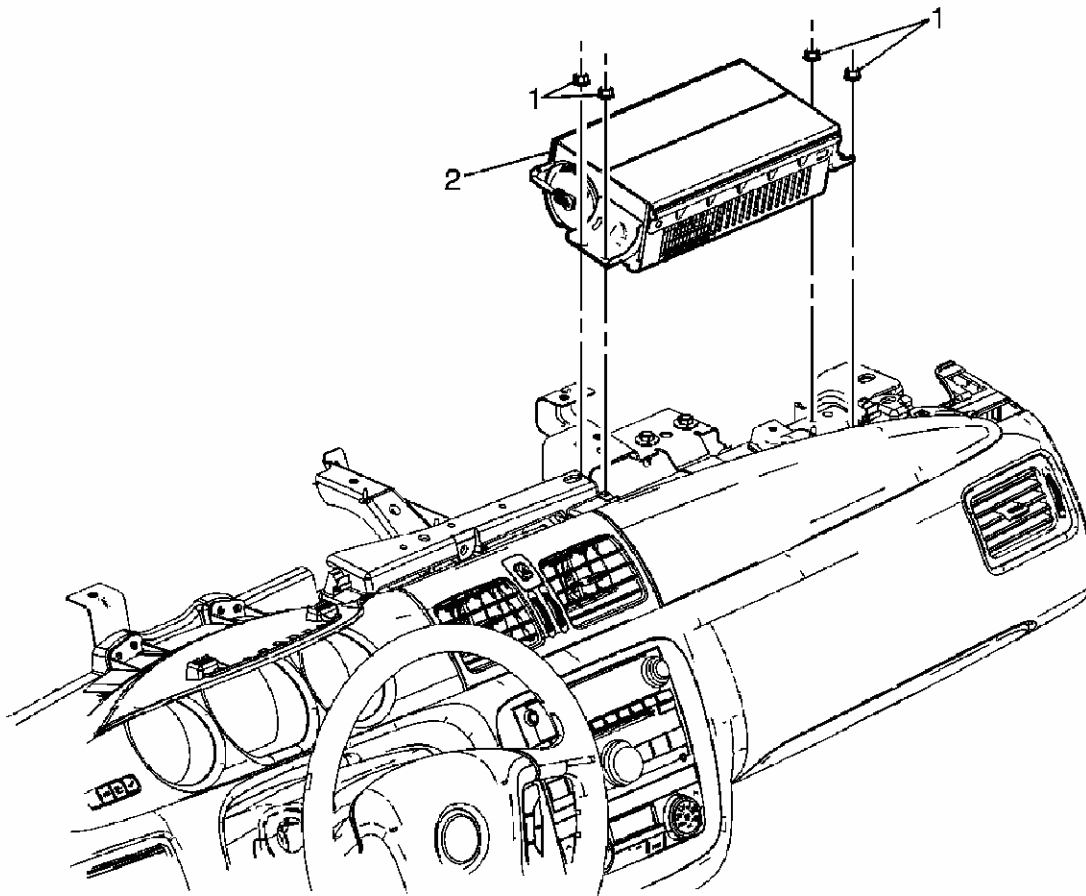
10. On vehicles with a tilt column, align the tilt lever into the steering column.
11. Slide the tilt lever handle into the steering column until the handle locks into position.



**Fig. 68: Steering Wheel, Shaft & Nut**  
**Courtesy of GENERAL MOTORS CORP.**

12. Install the steering wheel onto the steering shaft. Refer to **Steering Wheel Replacement** in Steering Wheel and Column.
13. Enable the SIR system. Refer to **SIR Disabling and Enabling**.

#### **INFLATABLE RESTRAINT INSTRUMENT PANEL MODULE REPLACEMENT**



**Fig. 69: Identifying Inflatable Restraint Instrument Panel Module**  
 Courtesy of GENERAL MOTORS CORP.

### Inflatable Restraint Instrument Panel Module Replacement

Callout	Component Name
<b>CAUTION:</b> Refer to <u>SIR Caution</u> .	
<b>CAUTION:</b> Refer to <u>SIR Inflator Module Handling and Storage Caution</u> .	
<b>NOTE:</b> Refer to <u>Fastener Notice</u> .	
<b>Fastener Tightening Specifications:</b> Refer to <u>Fastener Tightening Specifications</u> .	
<b>Preliminary Procedure</b>	
1. Disable the SIR. Refer to <u>SIR Disabling and Enabling</u> .	
2. Remove the instrument panel (I/P) upper trim panel. Refer to <b>Instrument Panel</b>	

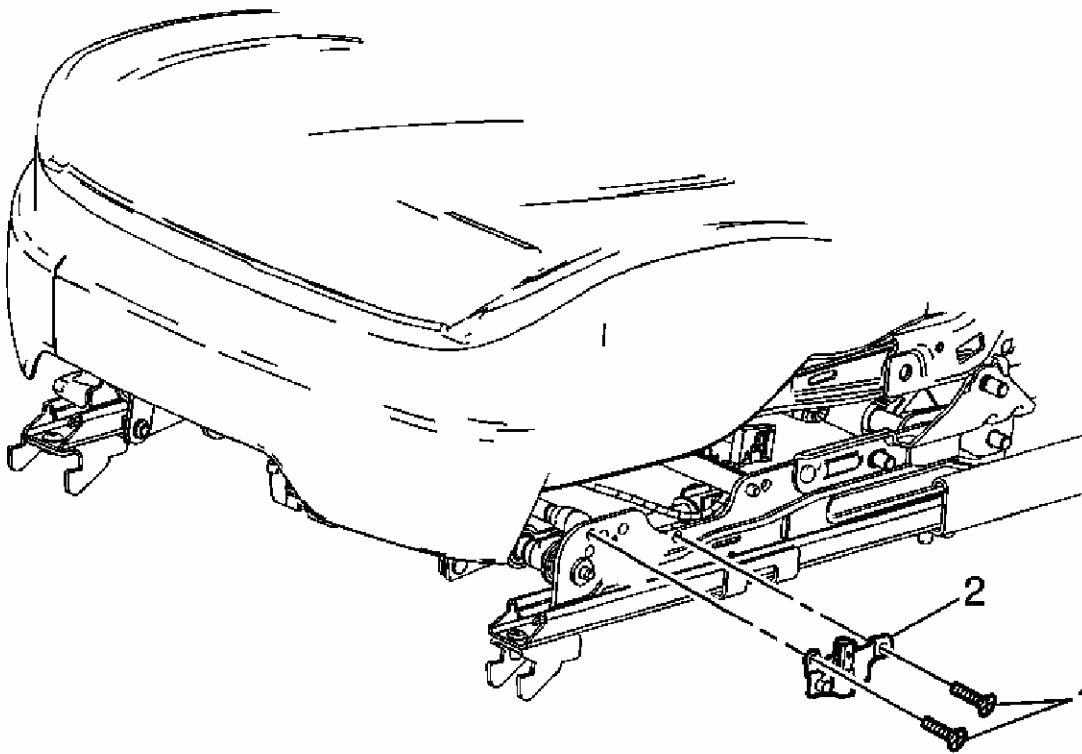
## 2006 Buick Lucerne CXS

2006 RESTRAINTS SIR - Lucerne

### Upper Trim Pad Replacement

1	Inflatable Restraint I/P Module Nut (Qty: 4) <b>Tighten:</b> 10 N.m (89 lb in)
2	Inflatable Restraint I/P Module Assembly <b>Tip:</b> Disconnect the electrical connector.

### INFLATABLE RESTRAINT SEAT POSITION SENSOR REPLACEMENT



**Fig. 70: Removing/Installing Inflatable Restraint Seat Position Sensor**  
Courtesy of GENERAL MOTORS CORP.

### Inflatable Restraint Seat Position Sensor Replacement

Callout	Component Name
<b>CAUTION:</b> Refer to <u>SIR Caution</u> .	
<b>NOTE:</b> Refer to <u>Fastener Notice</u> .	
<b>Fastener Tightening Specifications:</b> Refer to <u>Fastener Tightening Specifications</u> .	
<b>Preliminary Procedures</b>	



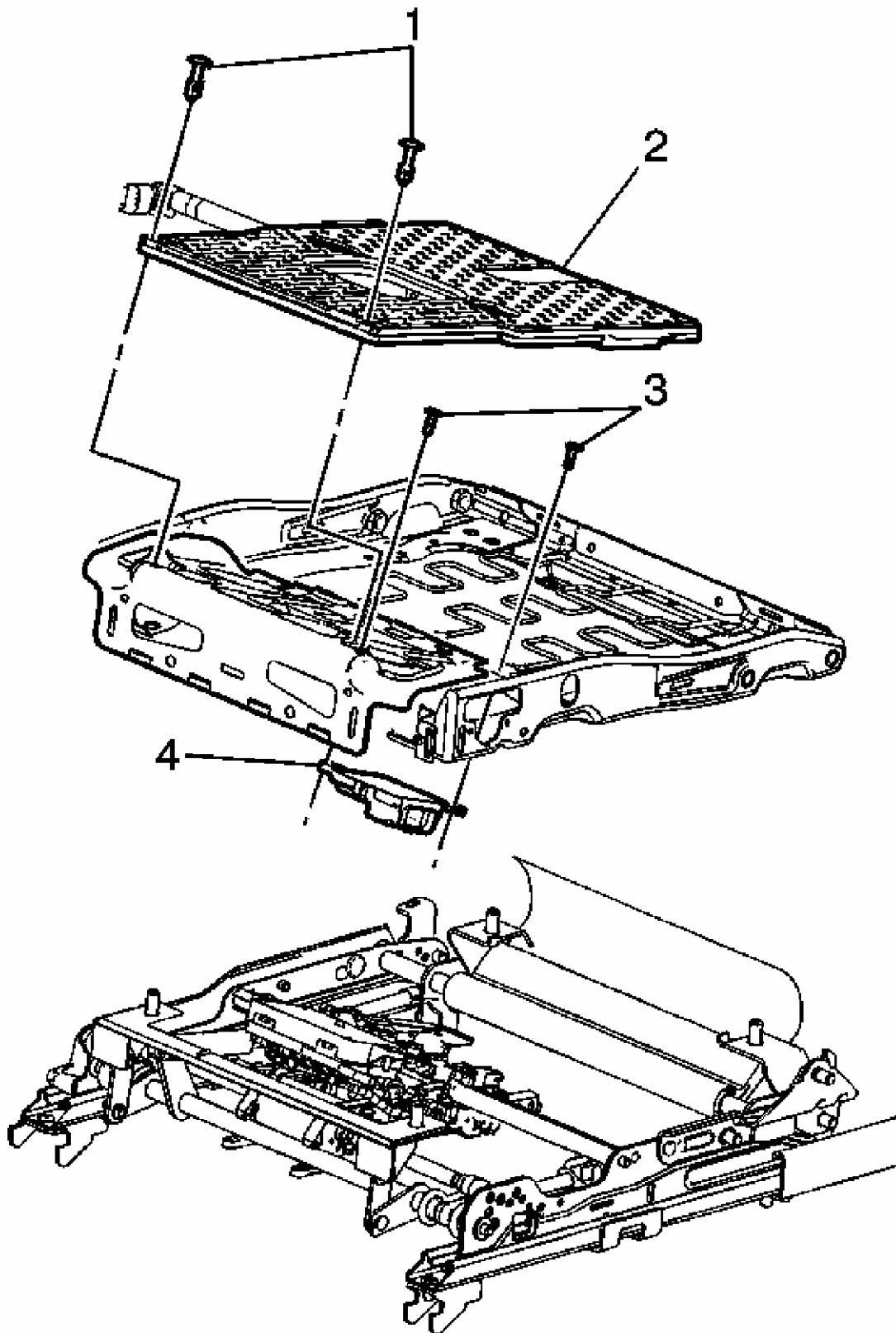
## 2006 Buick Lucerne CXS

2006 RESTRAINTS SIR - Lucerne

1. Disable the SIR system. Refer to **SIR Disabling and Enabling**.
2. Remove the front passenger seat. Refer to **Seat Replacement**.
3. Re-zero the inflatable restraint passenger presence system whenever the seat cushion or any component of the passenger presence system is removed. Refer to **Passenger Presence System Programming and Setup**.

1	Screw, Inflatable Restraint Front Passenger Position Sensor (Qty: 2) <b>Tighten:</b> 3 N.m (25 lb in)
2	Sensor Assembly, Inflatable Restraint Front Passenger Position <b>Tip:</b> Disconnect the electrical connector.

### INFLATABLE RESTRAINT PASSENGER PRESENCE SYSTEM REPLACEMENT - FRONT

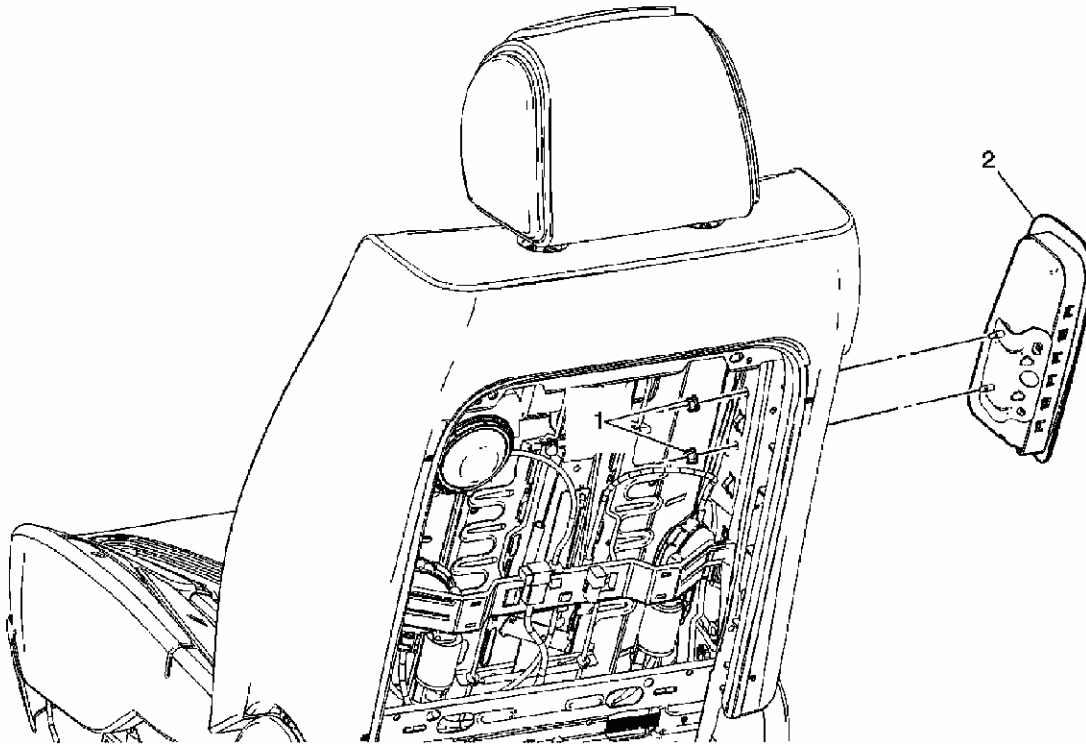


**Fig. 71: View Of Front Presence System Components**  
Courtesy of GENERAL MOTORS CORP.

**Inflatable Restraint Passenger Presence System Replacement - Front**

Callout	Component Name
<p><b>CAUTION:</b> Refer to <u>SIR Caution</u> .</p> <p><b>CAUTION:</b> Replace the passenger presence system as a complete assembly to prevent possible injury to the occupant. All the components in the service kit are assembled and calibrated as a unit. Using only some of the components in the service kit will cause the passenger presence system to operate improperly.</p> <p><b>CAUTION:</b> To avoid personal injuries, re-zero the passenger presence system whenever you remove or replace the seat cushion or trim. Failure to do so may cause the system to malfunction.</p> <p><b>Preliminary Procedures</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling</u>.</li> <li>2. Remove the front passenger seat. Refer to <u>Seat Replacement</u> .</li> <li>3. Remove the front passenger seat cushion cover and pad. Refer to <u>Seat Cushion Trim Cover and Pad Replacement</u> .</li> <li>4. Remove the front passenger seat cushion frame. Refer to <u>Front Seat Cushion Frame Replacement</u> .</li> <li>5. Re-zero the inflatable restraint passenger presence system whenever the seat cushion or any component of the passenger presence system is removed. Refer to <u>Control Module References</u> for programming and setup information.</li> </ol>	
1	Inflatable Restraint Front Passenger Presence Sensor Retainer (Qty: 2)
2	Inflatable Restraint Front Passenger Presence Sensor Assembly <b>Tip:</b> <ol style="list-style-type: none"> <li>1. Note the routing of the wiring harness and connector location for installation.</li> <li>2. Disconnect the electrical connector.</li> </ol>
3	Inflatable Restraint Front Passenger Presence Module Rivet (Qty: 2)
4	Inflatable Restraint Front Passenger Presence Module <b>Tip:</b> Disconnect the electrical connector.

**INFLATABLE RESTRAINT SIDE IMPACT MODULE REPLACEMENT - FRONT**



**Fig. 72: View Of Inflatable Restraint Side Impact Module Replacement - Front**  
 Courtesy of GENERAL MOTORS CORP.

### Inflatable Restraint Side Impact Module Replacement - Front

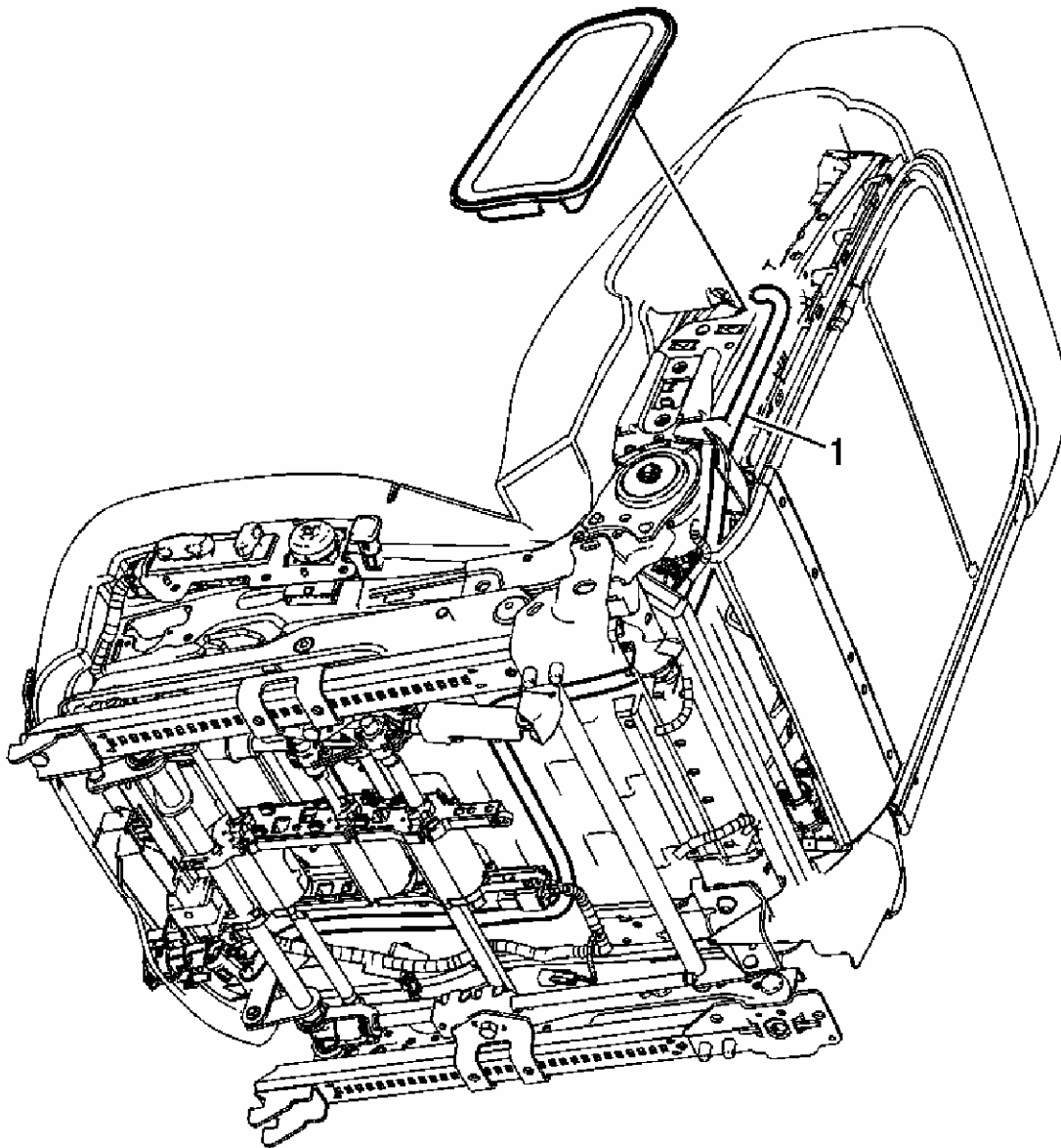
Callout	Component Name
<p><b>CAUTION:</b>            Following the deployment of a side impact air bag, inspect the following parts for damage. Replace these parts if necessary:</p> <ul style="list-style-type: none"> <li>• The seat cushion frame</li> <li>• The seat recliner, if equipped</li> <li>• The seat adjuster</li> <li>• The seat back frame</li> </ul> <p>Failure to do so may cause future personal injury.</p> <p><b>Preliminary Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <b><u>SIR Disabling and Enabling</u></b> and <b><u>SIR Disabling and Enabling</u></b>.</li> <li>2. Remove the seat back cushion finish panel. Refer to <b><u>Front Seat Back Panel Replacement</u></b>.</li> </ol>	
	Side Impact Inflatable Restraint Nut (Qty: 2)

## 2006 Buick Lucerne CXS

2006 RESTRAINTS SIR - Lucerne

1	<p><b>NOTE:</b> Refer to <u>Fastener Notice</u> .</p> <p><b>Tighten:</b> 5 N.m (44 lb in)</p>
2	<p>Inflatable Restraint Module Assembly</p> <p><b>Tip:</b></p> <ol style="list-style-type: none"><li>1. Disconnect the electrical connector.</li><li>2. Fully deploy the module before disposal. If the module was replaced under warranty, fully deploy and dispose of the module after the required retention period. Refer to <u>Inflator Module Handling and Scrapping</u>.</li></ol>

### INFLATABLE RESTRAINT SIDE IMPACT MODULE WIRING HARNESS REPLACEMENT



**Fig. 73: Identifying Inflation Restraint Side Impact Module**  
 Courtesy of GENERAL MOTORS CORP.

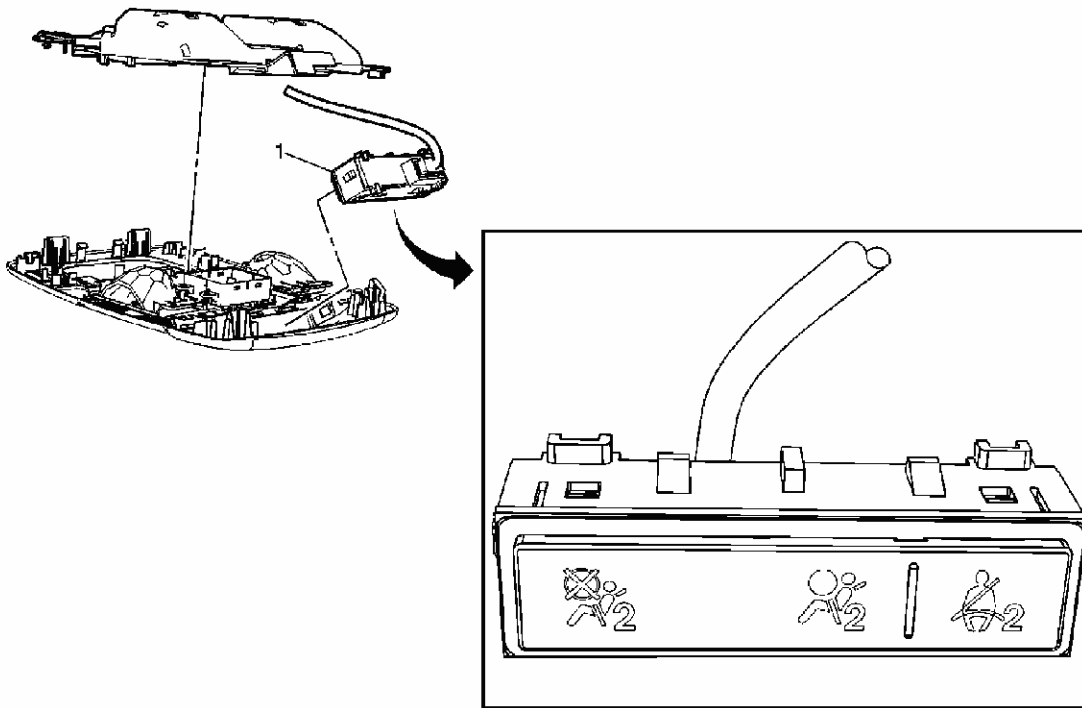
### Inflation Restraint Side Impact Module Wiring Harness Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> .	
<b>Preliminary Procedure</b>	
<ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling</u> and <u>SIR Disabling and Enabling</u>.</li> <li>2. Remove the front seat. Refer to <u>Seat Replacement</u>.</li> <li>3. Remove the inflatable restraint side impact module front. Refer to <b>Inflatable</b></li> </ol>	

**Restraint Side Impact Module Replacement - Front.**

4. Remove the seat back front panel. Refer to **Front Seat Back Panel Replacement**.

1	Inflatable Restraint Side Impact Module Wiring Harness
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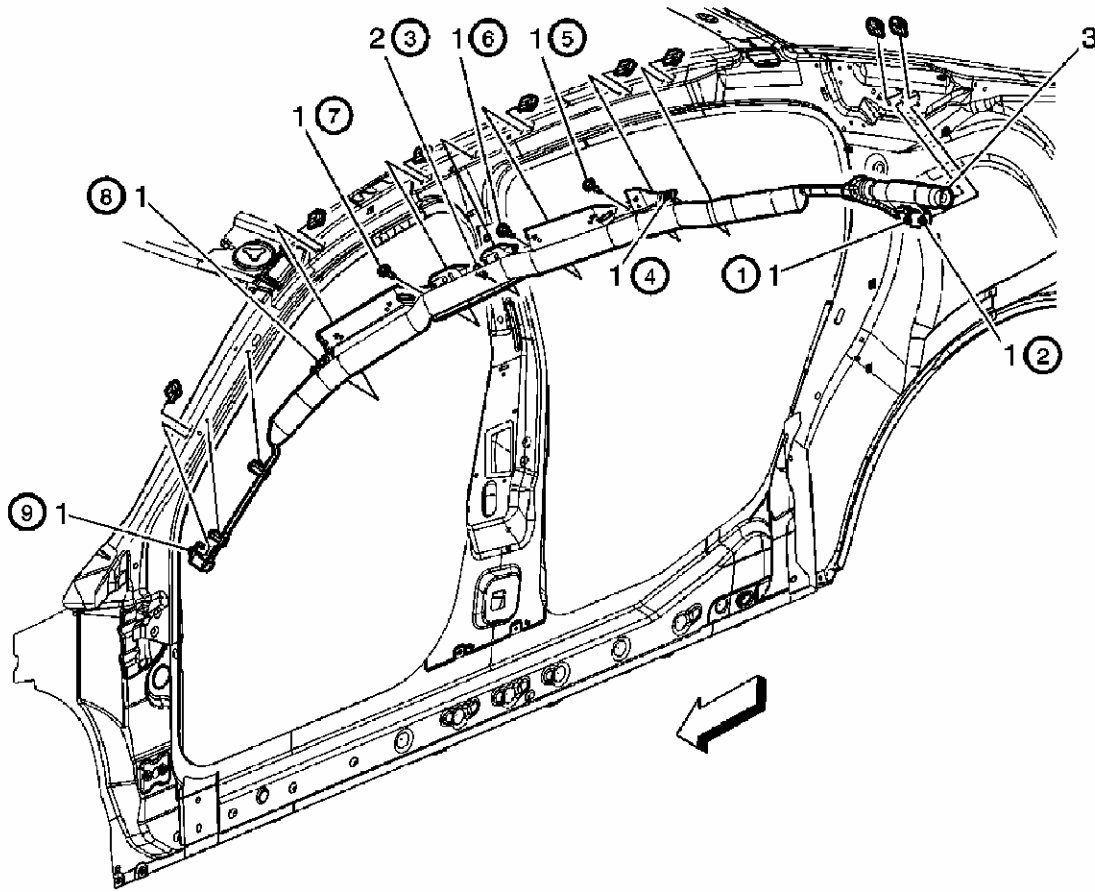
**INSTRUMENT PANEL INFLATABLE RESTRAINT MODULE INDICATOR REPLACEMENT**

**Fig. 74: Locating Inflatable Restraint IP Module Indicator**  
 Courtesy of GENERAL MOTORS CORP.

**Instrument Panel Inflatable Restraint Module Indicator Replacement**

Callout	Component Name
<b>Preliminary Procedures</b>	
<ol style="list-style-type: none"> <li>1. Remove the overhead console. Refer to <b><u>Roof Console Replacement</u></b>.</li> <li>2. Remove the overhead console map light socket assembly to access the indicator.</li> </ol>	
1	Inflatable Restraint Instrument Panel Module Indicator Assembly <b>Tip:</b> Release the tabs to remove the module from the overhead console.

**ROOF SIDE RAIL INFLATABLE RESTRAINT MODULE REPLACEMENT**



**Fig. 75: Locating Roof Side Rail Inflatable Restraint Module**  
 Courtesy of GENERAL MOTORS CORP.

### Roof Side Rail Inflatable Restraint Module Replacement

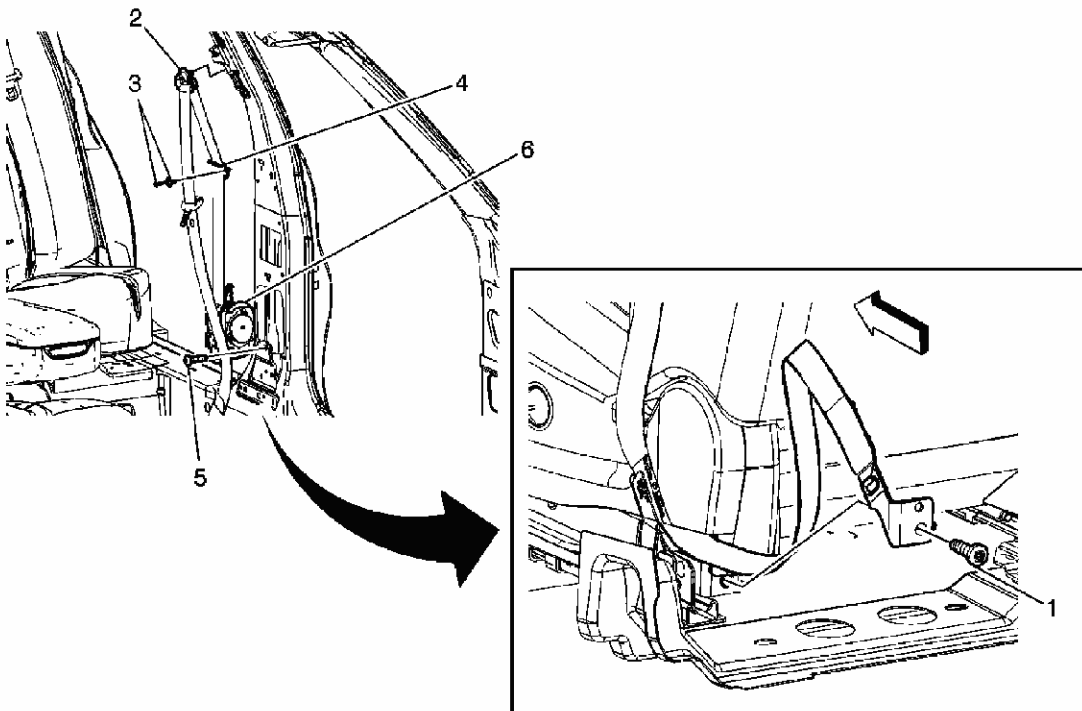
Callout	Component Name
<p><b>CAUTION:</b>            In order to prevent SIR deployment, personal injury or unnecessary SIR system repairs, do not strike the door or the door pillar in the area of the side impact sensor (SIS). Turn OFF the ignition and remove the key when performing service in the area of the SIS.</p> <p><b>CAUTION:</b>            Refer to <u>SIR Caution</u> .</p> <p><b>CAUTION:</b>            Refer to <u>SIR Inflator Module Handling and Storage Caution</u> .</p> <p><b>Preliminary Procedure</b></p> <ol style="list-style-type: none"> <li>1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling</u> for the left side or <u>SIR Disabling and Enabling</u>.</li> </ol>	



2. Remove the windshield pillar garnish molding. Refer to Windshield Pillar Garnish Molding Replacement .
3. Remove the center pillar trim. Refer to Center Pillar Upper Garnish Molding Replacement .
4. Remove the rear quarter upper trim panel. Refer to Rear Quarter Upper Trim Panel Replacement .
5. Remove the assist handles. Refer to Assist Handle Replacement .
6. Remove the coathook. Refer to Coat Hook Replacement .
7. Remove the sunshade. Refer to Sunshade Replacement .
8. Lower the side of the headliner. Refer to Headlining Trim Panel Replacement .

1	<p>Inflatable Restraint Roof Side Rail Bolts Mandatory Tightening Sequence</p> <p><b>NOTE:</b> Refer to <u>Fastener Notice</u> .</p> <p><b>Tighten:</b> 9 N.m (80 lb in)</p>
2	Inflatable Restraint Integral Retainer
3	<p>Inflatable Restraint Roof Side Rail Module Assembly</p> <p><b>Tip:</b> Disconnect the electrical connector.</p>

## SEAT BELT RETRACTOR PRETENSIONER REPLACEMENT - FRONT



**Fig. 76: View Of Front Seat Belt Retractor Pretensioner**  
**Courtesy of GENERAL MOTORS CORP.**

### Seat Belt Retractor Pretensioner Replacement - Front

Callout	Component Name
<b>CAUTION:</b> Refer to <u>SIR Caution</u> .	
<b>CAUTION:</b> In order to prevent accidental deployment and the risk of personal injury, do not dispose of an undeployed inflatable restraint seat belt pretensioner as normal shop waste. Undeployed seat belt pretensioners contain substances that could cause severe illness or personal injury if their sealed containers are damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed seat belt pretensioner. Failure to observe the following disposal methods may be a violation of federal, state or local laws.	
<b>Preliminary Procedure</b>	
<ol style="list-style-type: none"> <li>1. Disable the SIR. Refer to <u>SIR Disabling and Enabling</u> and <u>SIR Disabling and Enabling</u>.</li> <li>2. Move the front seat to the full forward position.</li> <li>3. Remove the center pillar upper trim panel assembly. Refer to <u>Center Pillar Upper Garnish Molding Replacement</u> .</li> <li>4. Remove the center pillar lower trim panel assembly. Refer to <u>Center Pillar Lower Garnish Molding Replacement</u> .</li> <li>5. Remove the trim covers to access the anchor bolt and belt retractor.</li> </ol>	
1	Seat Belt Retractor Anchor Plate Bolt  <b>NOTE:</b> Refer to <u>Fastener Notice</u> .  <b>Tighten:</b> 47 N.m (35 lb ft)
2	Seat Shoulder Belt Guide Bolt  <b>Tighten:</b> 47 N.m (35 lb ft)
3	Seat Belt, Push On Retainer <b>Tip:</b> Use a flat bladed tool to remove locking pin in retainer.
4	Intermediate Guide
5	Seat Shoulder Belt Retractor Screw  <b>Tighten:</b> 47 N.m (35 lb ft)
6	Retractor Belt Assembly

**REPAIRS AND INSPECTIONS REQUIRED AFTER A COLLISION****Accident With or Without Air Bag Deployment - Component Inspections**

**CAUTION:** Proper operation of the SIR sensing system requires that any repairs to the vehicle structure return the vehicle structure to the original production configuration. Not properly repairing the vehicle structure could cause non-deployment in a collision or deployment for conditions less severe than intended.

After a collision, inspect the following components as indicated. If any damage is detected, replace the component. If damage to the mounting points or mounting hardware is detected, repair the component or replace the hardware as needed.

- Steering column-Perform the steering column accident damage checking procedures. Refer to **Steering Column Accident Damage Inspection** .
- Instrument panel (I/P) knee bolsters and mounting points-Inspect the knee bolsters for bending, twisting, buckling or any other type of damage.
- I/P brackets, braces, etc.-Inspect for bending, twisting, buckling or any other type of damage.
- Seat belts-Perform the seat belt operational and functional checks. Refer to **Operational and Functional Checks** .
- Seats and seat mounting points-Inspect for bending, twisting, buckling or any other type of damage.
- Passenger seat bottom equipped with Passenger Presence System (PPS)-Check for any DTCs or problems that may cause the PPS not to function properly.

**Accident With Frontal Deployment - Component Replacement and Inspections**

After a collision involving air bag deployment, replace the following components.

**IMPORTANT:** The front passenger seat is equipped with a PPS, which detects an occupant. If the requirements for disabling the I/P air bag are met, then the PPS will communicate with the SDM to disable/turn OFF the I/P air bag, even in a accident. For more information on the PPS, refer to **SIR System Description and Operation**.

- Inflatable restraint I/P module, if deployed and after performing the necessary inspections listed above
- Inflatable restraint steering wheel module

- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint front end sensors
- Inflatable restraint seat belt retractor pretensioners

Perform additional inspections on the following components.

- Steering wheel module coil and the coil wiring pigtail-Inspect for melting, scorching or other damage due to excessive heat.
- Mounting points or mounting hardware for the I/P module, steering wheel module, SDM and pretensioners-Inspect for any damage and repair or replace each component as needed.

#### **Accident With Side Air Bag Deployment - Component Replacement and Inspections**

After a collision involving side air bag deployment, replace the following components:

- Inflatable restraint side impact sensors (SIS), on the side of the impact
- Inflatable restraint roof rail module, on the side of the impact
- Inflatable restraint side impact module, on the side of the impact
- Inflatable restraint SDM
- Inflatable restraint seat belt retractor pretensioners

Perform additional inspections on the following components:

- Mounting points or mounting hardware for the SIS-Inspect for any damage and repair or replace each component as needed.
- Mounting points or mounting hardware for the roof rail module on the side of impact-Inspect for any damage and repair or replace each component as needed.
- Mounting points or mounting hardware for the side impact module on the side of impact-Inspect for any damage and repair or replace each component as needed.
- Mounting points or mounting hardware for the SDM and seat belt retractor pretensioners-Inspect for any damage and repair or replace each component as needed.

#### **INFLATOR MODULE HANDLING AND SCRAPPING**

##### **Tools Required**

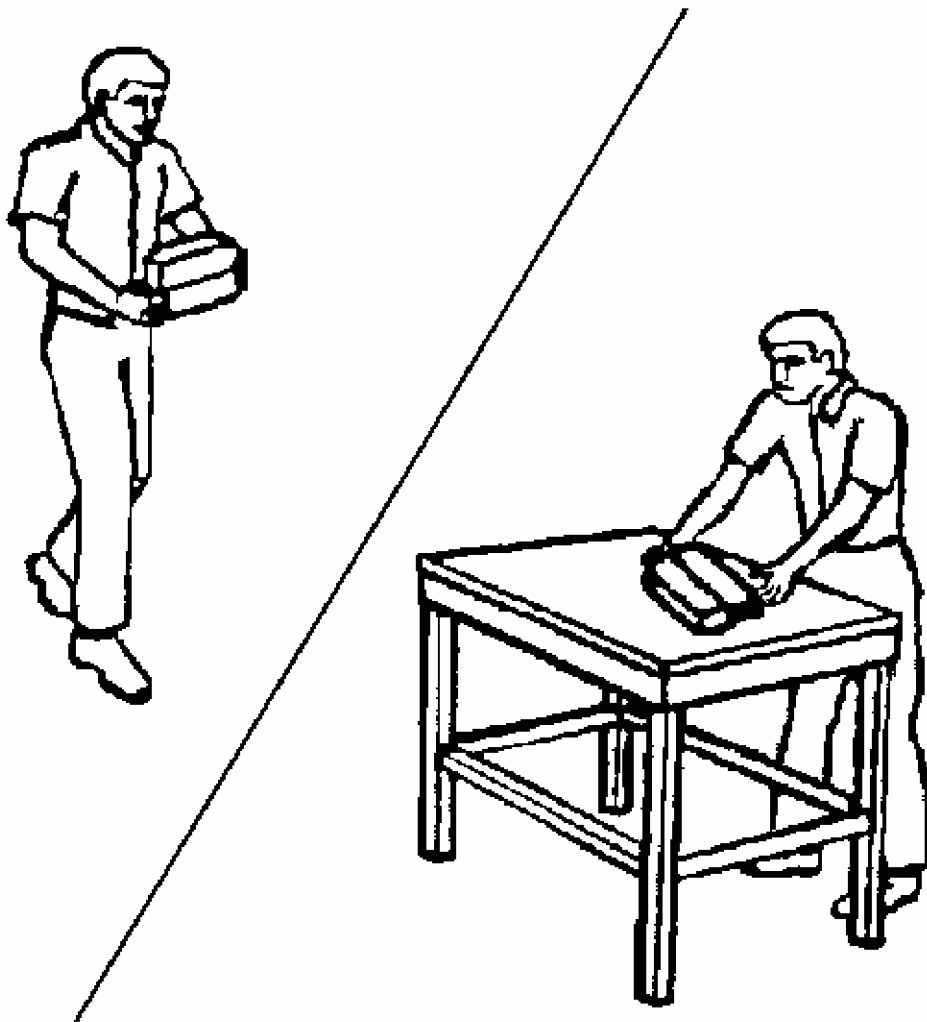
**NOTE:**      **The followings tools are required to deploy an undeployed inflatable restraint module.**

- **J 38826** SIR Deployment Harness. See **Special Tools**.
- **J 39401-B** SIR Deployment Fixture. See **Special Tools**.

- J 38826-25 Roof Rail Module Adapter
- J 38826-25 Side Impact Module Adapter
- J 38826-75 Steering Wheel Module Adapter
- J 38826-80 I/P Module Adapter

**Live (Undeployed) Inflator Module**

**CAUTION:** Refer to SIR Inflator Module Handling and Storage Caution .



**Fig. 77: View Of Proper Handling Of Undeployed Inflator Module**

**Courtesy of GENERAL MOTORS CORP.**

Take special care when handling or storing a live (undeployed) inflator module. An inflator module deployment produces a rapid generation of gas. This may cause the inflator module or an object in front of the inflator module, to project through the air in the event of an unlikely deployment.

**Dual Stage Inflator Module**

Dual stage inflator modules have 2 deployment stages. If stage 1 was used to deploy a dual stage inflator module, stage 2 may still be active. Therefore, a deployed dual stage inflator module must be treated as an active module. If disposal of a deployed or undeployed dual stage module is required, both deployment loops must be energized to deploy the air bag.

**Scrapping Procedure**

During the course of a vehicles useful life, certain situations may arise which will require the disposal of a live (undeployed) inflator module. Do not dispose a live (undeployed) inflator module through normal disposal channels until the inflator module has been deployed. The following information covers the proper procedures for the disposing of a live (undeployed) inflator module.

Do not deploy the inflator module in the following situations:

- After replacement of an inflator module under warranty-The inflator module may need to be returned undeployed to the manufacturer.
- If the vehicle is the subject of a Product Liability report related to the SIR system and is subject to a Preliminary Investigation (GM-1241)-Do not alter the SIR system in any manner.
- If the vehicle is involved in a campaign affecting the inflator modules-Follow the instructions in the Campaign Service Bulletin for proper SIR handling procedures.

**Deployment Procedures**

The inflator module can be deployed inside or outside of the vehicle. The method used depends upon the final disposition of the vehicle. Review the following procedures in order to determine which will work best in a given situation:

**Deployment Outside Vehicle (Steering Wheel Module, I/P Module and Side Impact Module)**

Deploy the inflator module outside of the vehicle when the vehicle will be returned to service. Situations that require deployment outside of the vehicle include the following:

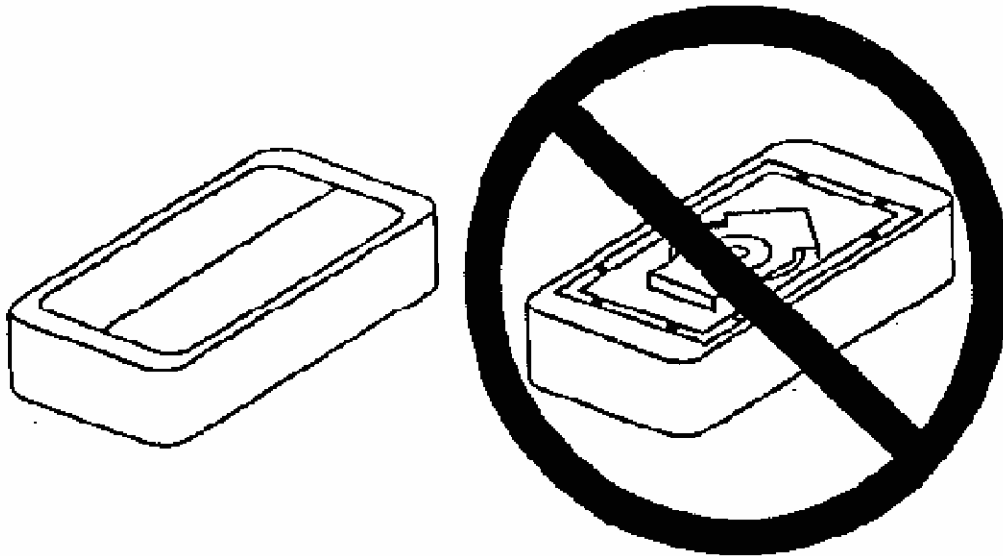
- Using the SIR diagnostics, you determine that the inflator module is malfunctioning.
- The inflator module is cosmetically damaged (scratched or ripped).

- The inflator module pigtail (if equipped) is damaged.
- The inflator module connector is damaged.
- The inflator module connector terminals are damaged.

Deployment and disposal of a malfunctioning inflator module is subject to any required retention period.

**CAUTION: Refer to SIR Inflator Module Disposal Caution .**

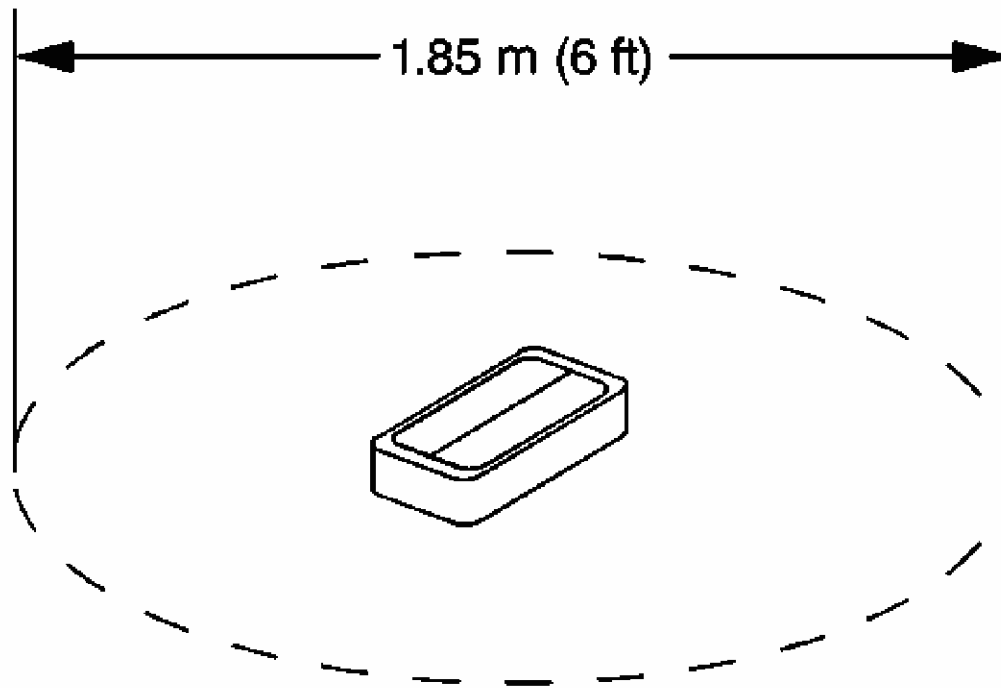
1. Turn OFF the ignition.
2. Remove the ignition key.
3. Put on safety glasses.
4. Remove the inflator module. Refer to the following:
  - If you are removing the steering wheel module, refer to **Inflatable Restraint Steering Wheel Module Replacement**.
  - If you are removing the instrument panel (I/P) module, refer to **Inflatable Restraint Instrument Panel Module Replacement**.
  - If you are removing a side impact module, refer to **Inflatable Restraint Side Impact Module Replacement - Front**.
  - If you are removing a roof rail module, refer to **Roof Side Rail Inflatable Restraint Module Replacement**.



**Fig. 78: Illustrating Proper Storage Of Inflator Module**  
**Courtesy of GENERAL MOTORS CORP.**

5. Place the inflator module with the vinyl trim cover facing up and away from the surface on a work bench.



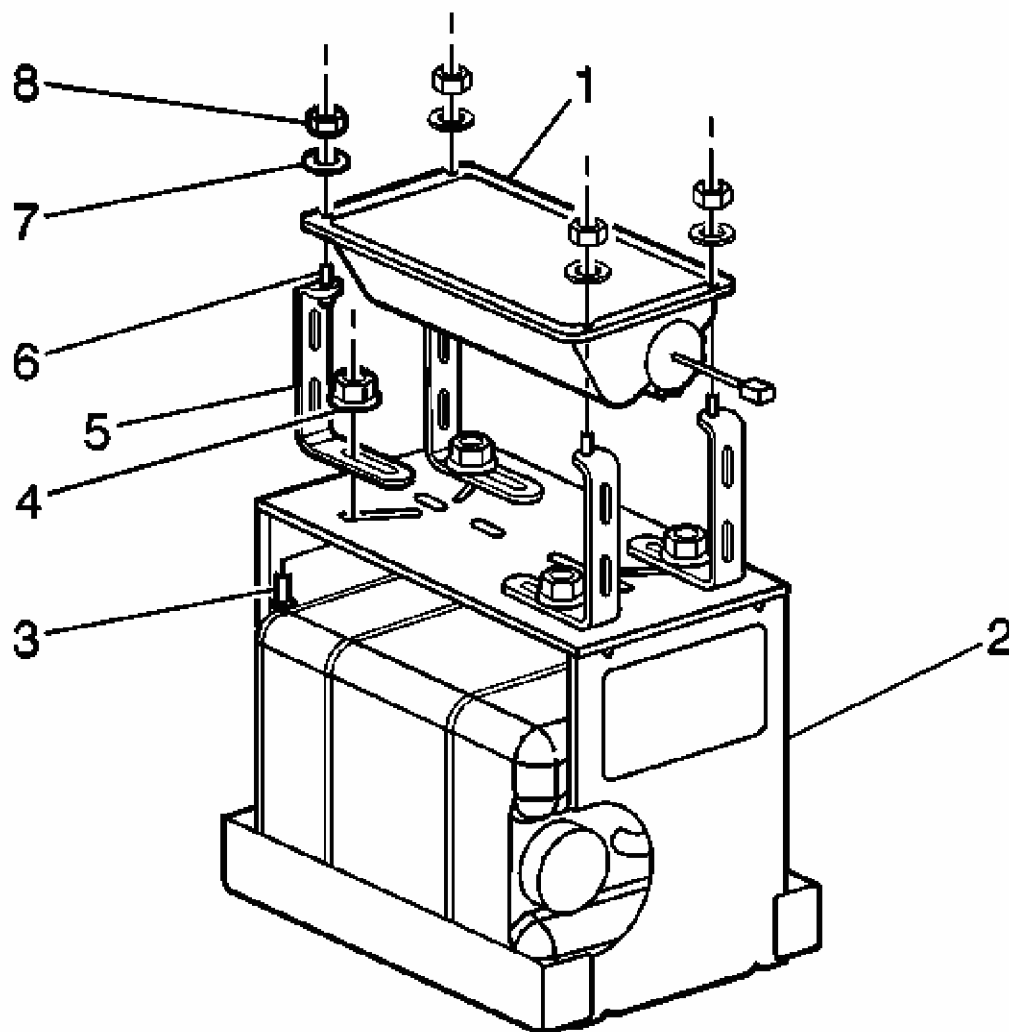


**Fig. 79: Clearance For Deployment Of Inflator Module**  
**Courtesy of GENERAL MOTORS CORP.**

6. Clear a space on the ground about 1.85 m (6 ft) in diameter for deployment of the inflator module or deployment fixture. If possible, use a paved, outdoor location free of activity. Otherwise, use a space free of activity on the shop floor. Make sure you have sufficient ventilation.
7. Make sure no loose or flammable objects are in the area.

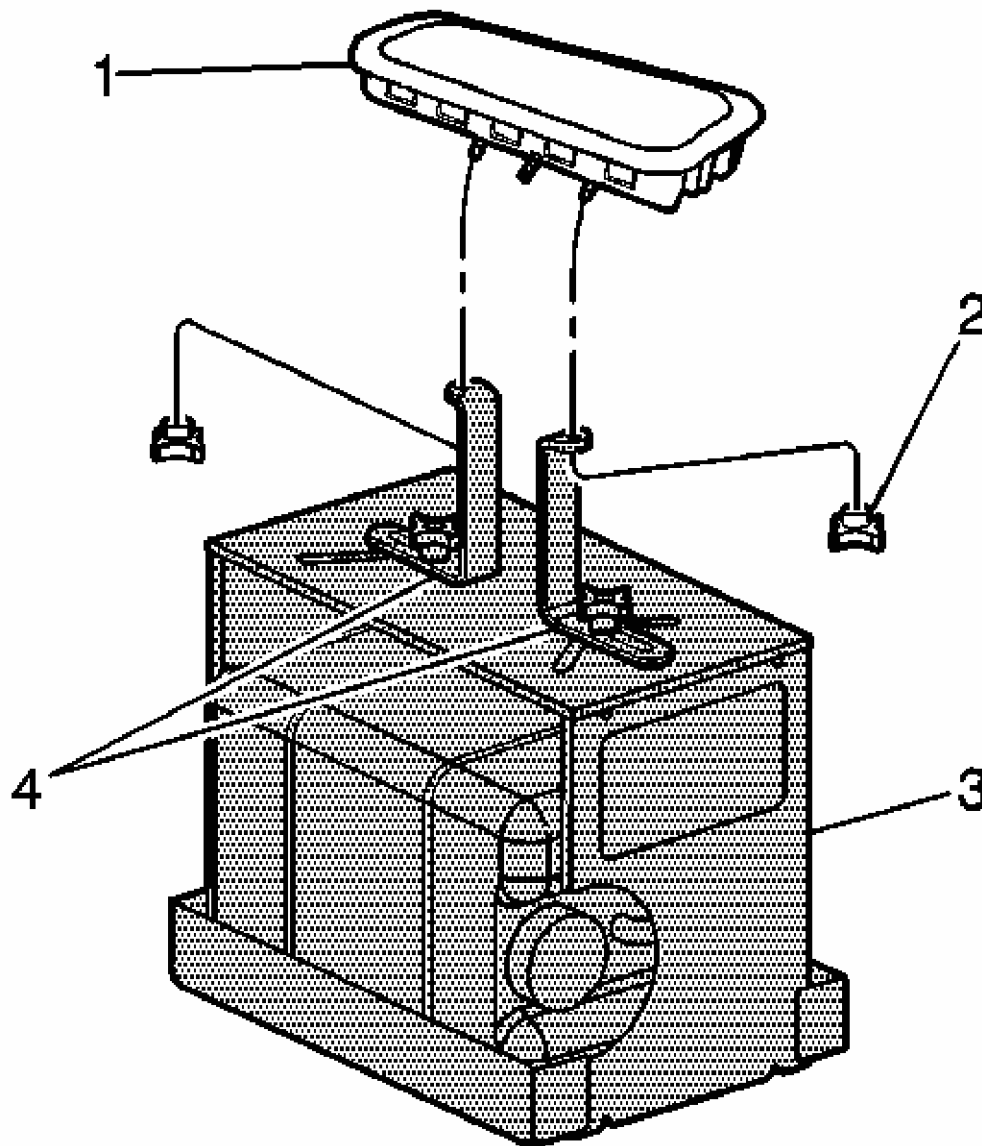
**IMPORTANT:** Dual stage deployments are only used in steering wheel and I/P inflator modules. If stage 1 was used to deploy a dual stage inflator module, stage 2 may still be active. If disposal of a deployed or undeployed dual stage module is required, both deployment loops must be energized to deploy the air bag.

8. If you have a steering wheel inflator module, place the inflator module in the center of the space.



**Fig. 80: Identifying I/P Module Components**  
Courtesy of GENERAL MOTORS CORP.

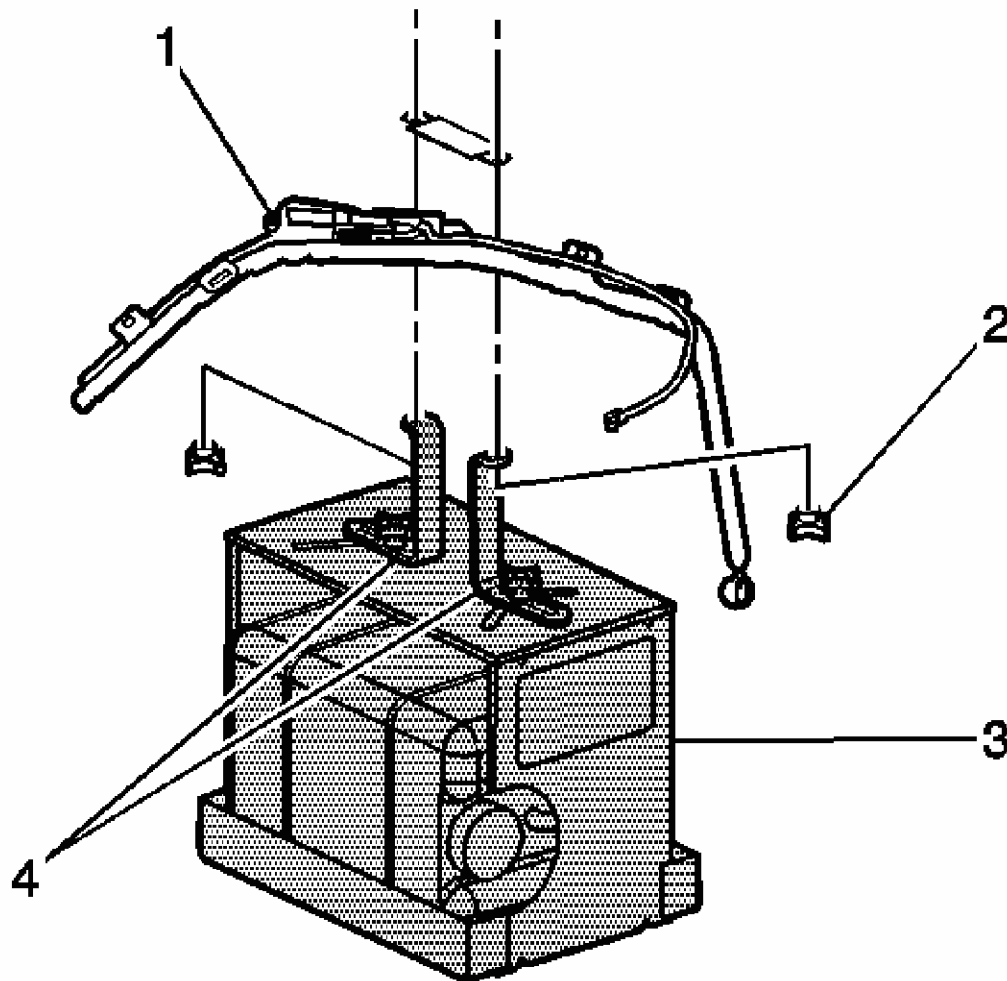
9. If you have an I/P inflator module, refer to the following instructions:
  1. Place the **J 39401-B** SIR deployment fixture (2) in the center of the cleared area.  
See **Special Tools**.
  2. Fill the deployment fixture with water or sand.
  3. Using the proper nuts and bolts, mount the I/P module (1) to the deployment fixture (2), with the vinyl trim facing up.
  4. Securely tighten all fasteners that hold the I/P module (1) to the deployment fixture (2).



**Fig. 81: View Of Side Impact Module & Components**  
**Courtesy of GENERAL MOTORS CORP.**

10. If you have a side impact module, refer to the following instructions:
  1. Place the **J 39401-B** SIR deployment fixture (3) in the center of the cleared area. See **Special Tools**.
  2. Fill the deployment fixture with water or sand.
  3. Using the proper nuts and mount the side impact module (1) to the deployment

- fixture (3), with the vinyl trim facing up.
4. Adjust and secure the fixture arms (4) to the deployment fixture (3).
  5. Securely tighten all fasteners that hold the side impact module (1) to the deployment fixture (3).

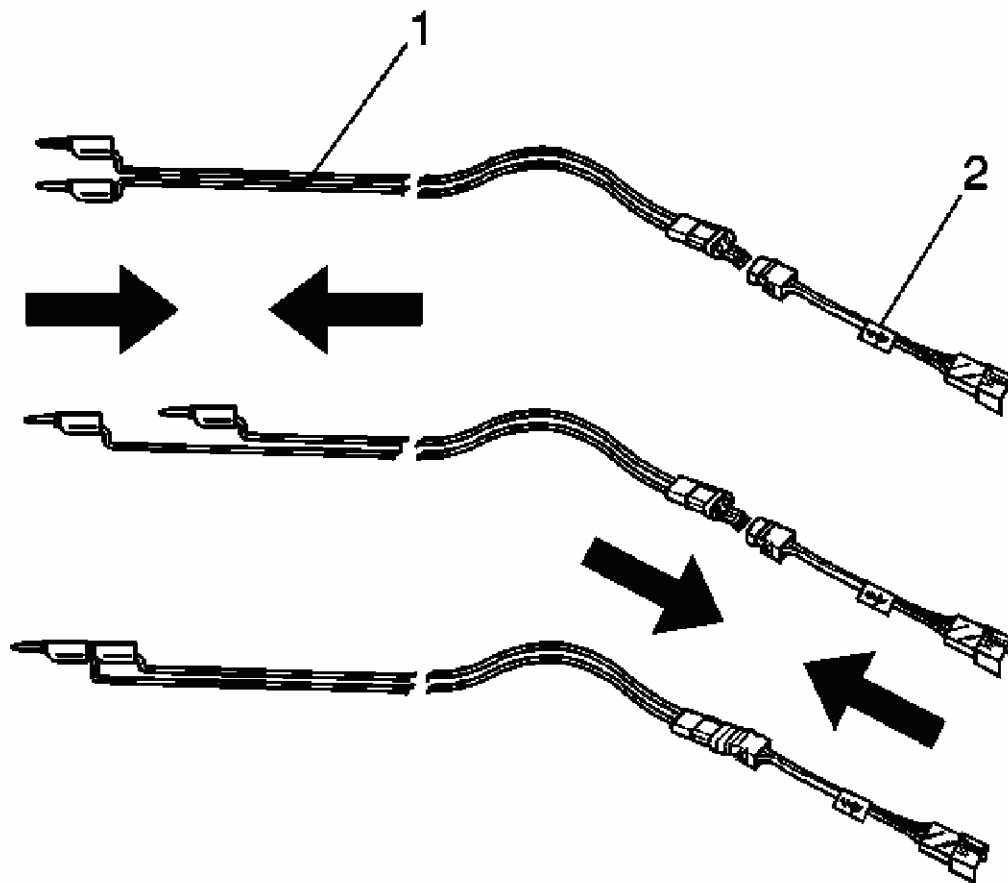


**Fig. 82: Identifying Fasteners Holding Side Impact Module To Deployment Fixture**

Courtesy of GENERAL MOTORS CORP.

11. If you have a roof rail module, refer to the following instructions:
  1. Place the **J 39401-B** SIR deployment fixture (3) in the center of the cleared area.  
See **Special Tools**.
  2. Fill the deployment fixture with water or sand.

3. Using the proper nuts (2) and mount the roof rail module (1) to the deployment fixture (3), with the vinyl face up.
4. Adjust and secure the fixture arms (4) to the deployment fixture (3).
5. Securely tighten all fasteners that hold the side impact module (1) to the deployment fixture (3).

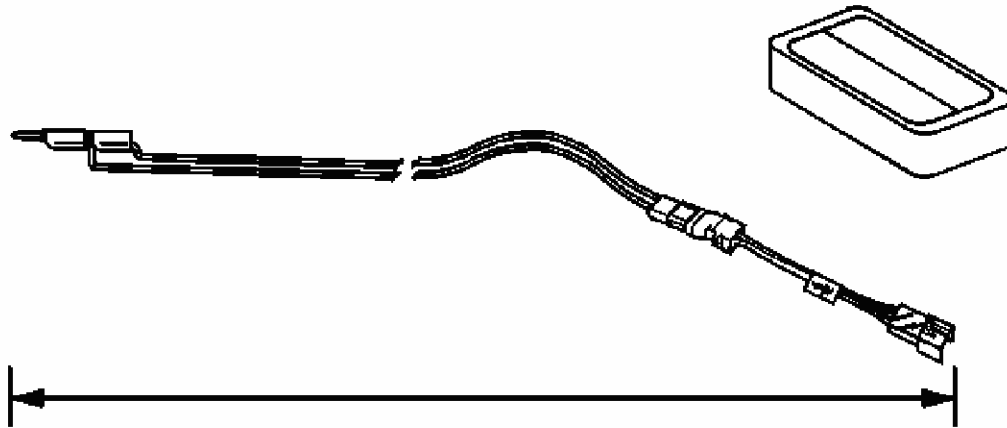


**Fig. 83: Identifying SIR Deployment Harness & Adapter**  
**Courtesy of GENERAL MOTORS CORP.**

12. Inspect the **J 38826** and the appropriate pigtail adapter for damage. See **Special Tools**. Replace as needed.
13. Short the 2 SIR deployment harness leads (1) together using one banana plug seated into the other.

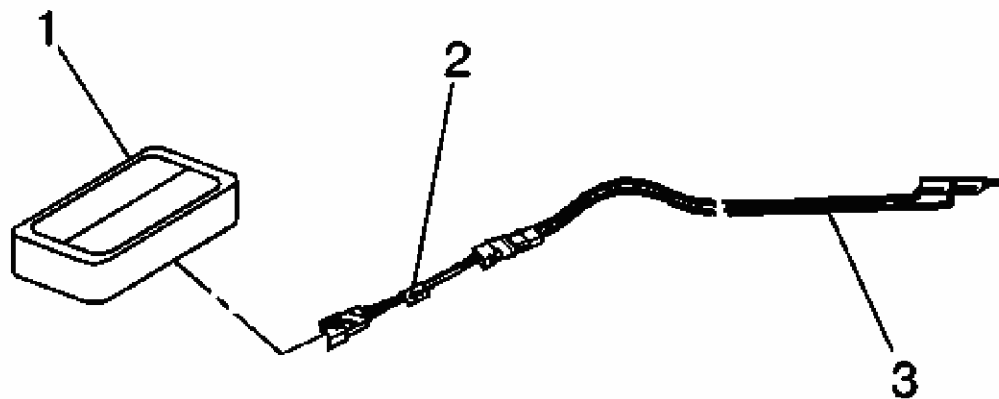
**IMPORTANT:** Refer to Tools Required for the correct adapter.

14. Connect the appropriate pigtail adapter (2) to the SIR deployment harness (1).



**Fig. 84: Extending SIR Deployment Harness & Adapter**  
**Courtesy of GENERAL MOTORS CORP.**

15. Extend the SIR deployment harness and adapter to full length from the deployment fixture.



**Fig. 85: Inflator Module & SIR Deployment Harness Adapter**  
**Courtesy of GENERAL MOTORS CORP.**

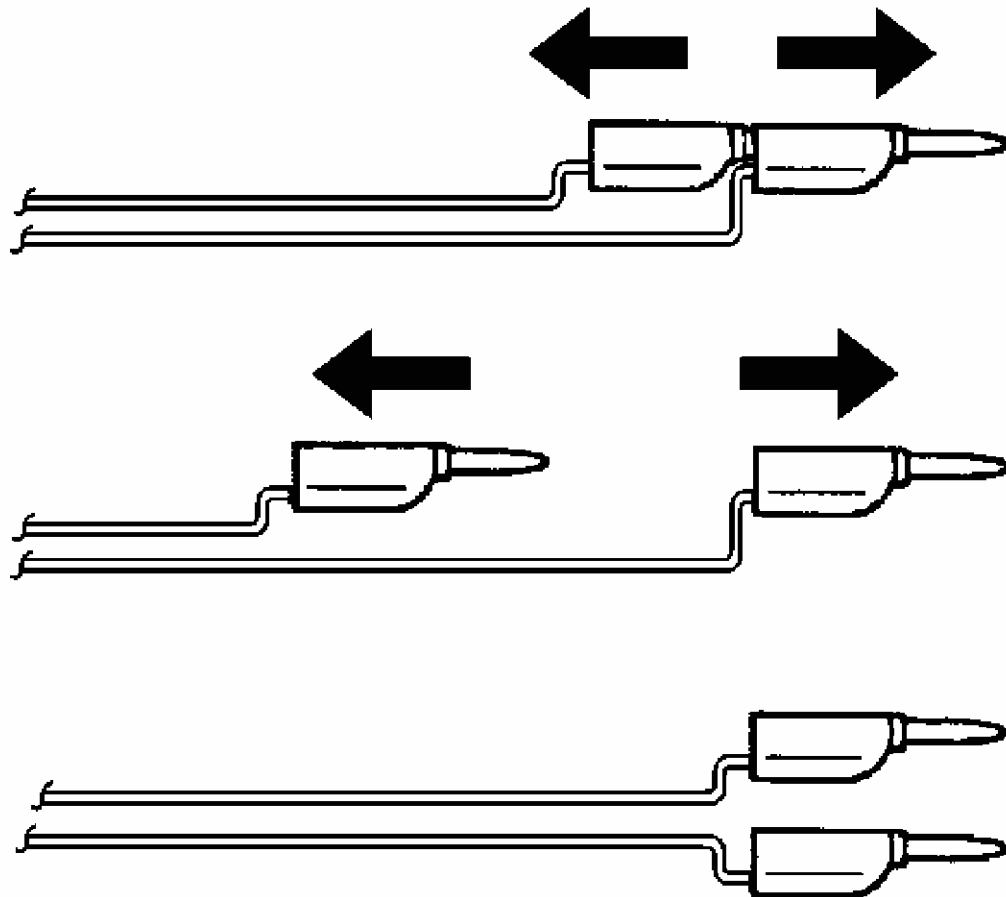
16. Connect the inflator module to the adapter (2) on the SIR deployment harness (1).

17. Place a 12 V minimum/2 A minimum power source (i.e., vehicle battery) near the shorted end of the harness.

**IMPORTANT:**

- The rapid expansion of gas involved with deploying an inflator module is very loud. Notify all the people in the immediate area that you intend to deploy the inflator module.
- When the inflator module deploys, the deployment fixture may jump about 30 cm (1 ft) vertically. This is a normal reaction of the inflator module due to the force of the rapid expansion of gas inside the inflator module.
- If you are deploying a dual stage inflator module with stage 1 already deployed, the fixture may not move and the noise may have been reduced.

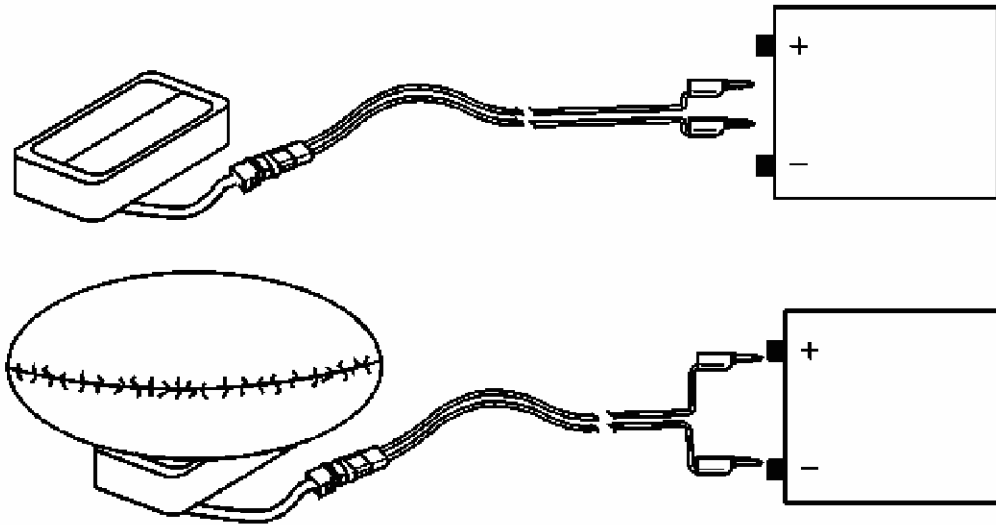
18. Clear the area of people.



**Fig. 86: Separating Banana Plugs**  
**Courtesy of GENERAL MOTORS CORP.**

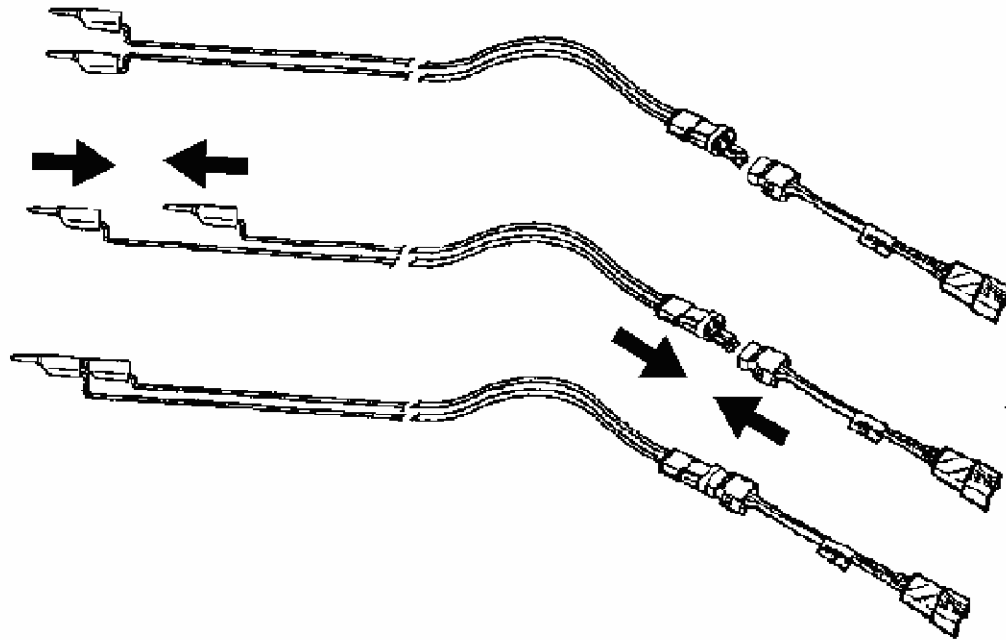
19. Separate the 2 banana plugs on the SIR deployment harness.





**Fig. 87: Connecting SIR Deployment Harness Wires To Power Source**  
Courtesy of GENERAL MOTORS CORP.

20. Connect the SIR deployment harness wires to the power source. Inflator module deployment will occur when contact is made.

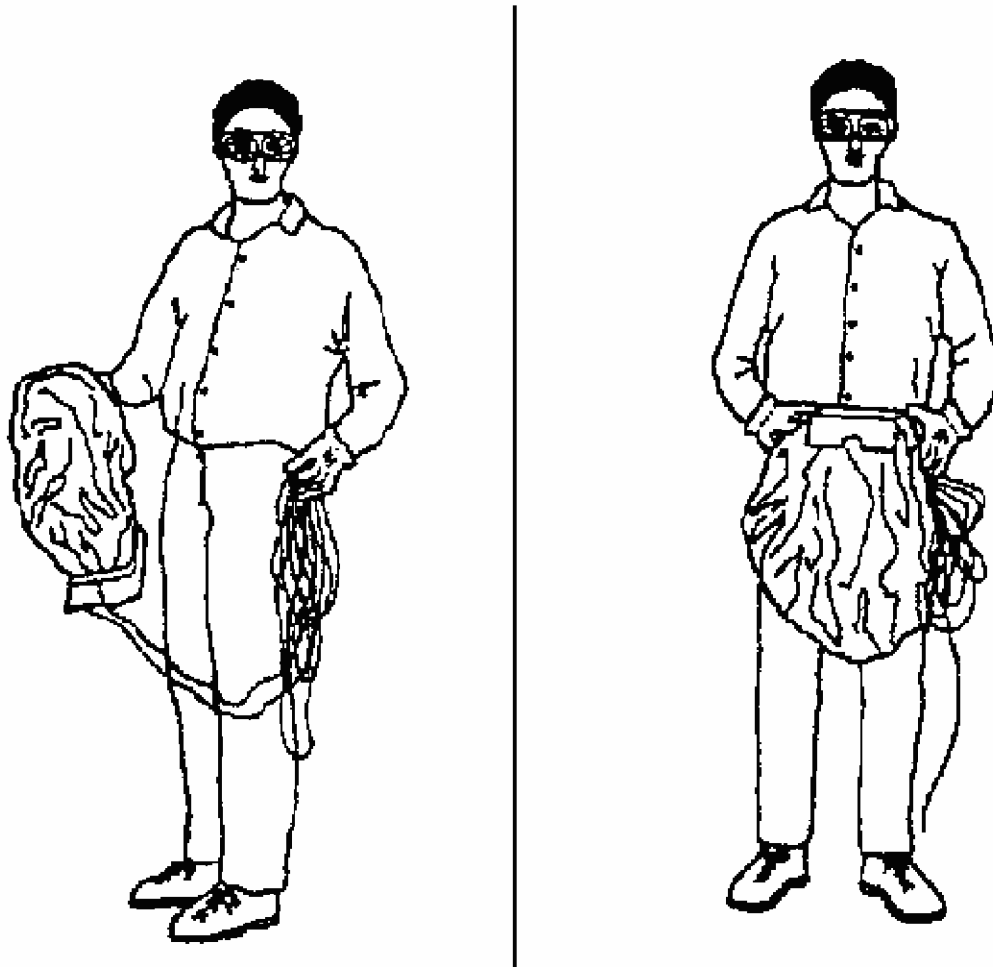


**Fig. 88: View Of Deployment Harness Leads**  
**Courtesy of GENERAL MOTORS CORP.**

21. Disconnect the SIR deployment harness from the power source after the inflator module deploys.
22. If the inflator module did not deploy, disconnect the adapter and discontinue the procedure. Contact the Technical Assistance Group. Otherwise, proceed to the following steps.

**CAUTION: Refer to SIR Deployed Inflator Modules Are Hot Caution .**

23. Seat one banana plug into the other in order to short the deployment harness leads.



**Fig. 89: Disposing Of Deployed Inflator Module**  
**Courtesy of GENERAL MOTORS CORP.**

24. Put on a pair of shop gloves.
25. Disconnect the pigtail adapter from the inflator module as soon as possible.
26. Inspect the pigtail adapter and the SIR deployment harness. Replace as needed.
27. Dispose of the deployed inflator module through normal refuse channels.
28. Wash hands with a mild soap.

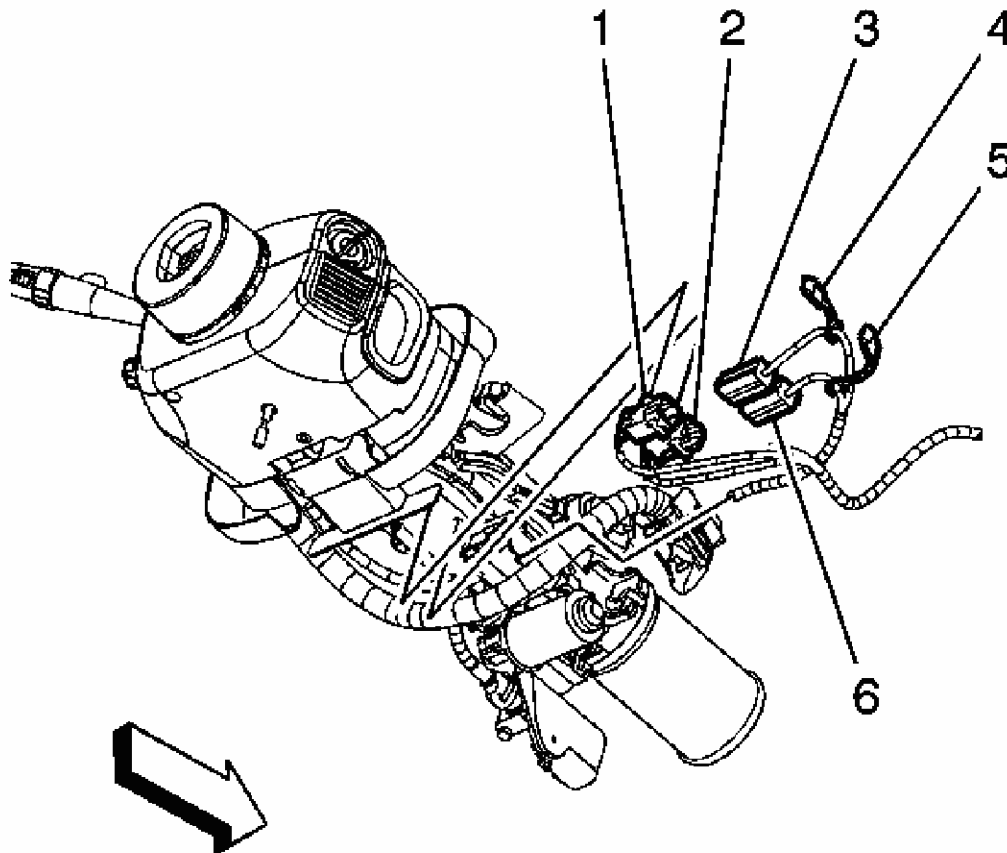
**Deployment Inside Vehicle (Vehicle Scrapping Procedure)**

Deploy the inflator modules inside of the vehicle when destroying the vehicle or when salvaging the vehicle for parts. This includes but is not limited to the following situations:

- The vehicle has completed its useful life.
- Irreparable damage occurs to the vehicle in a non-deployment type accident.
- Irreparable damage occurs to the vehicle during a theft.
- The vehicle is being salvaged for parts to be used on a vehicle with a different VIN as opposed to rebuilding as the same VIN.

**CAUTION: Refer to SIR Inflatable Module Deployment Outside Vehicle Caution .**

1. Place the ignition to the OFF position.
2. Remove the ignition key.
3. Put on safety glasses.
4. Remove all loose objects from the front seats.
5. Disable the SIR system. Refer to **SIR Disabling and Enabling**.



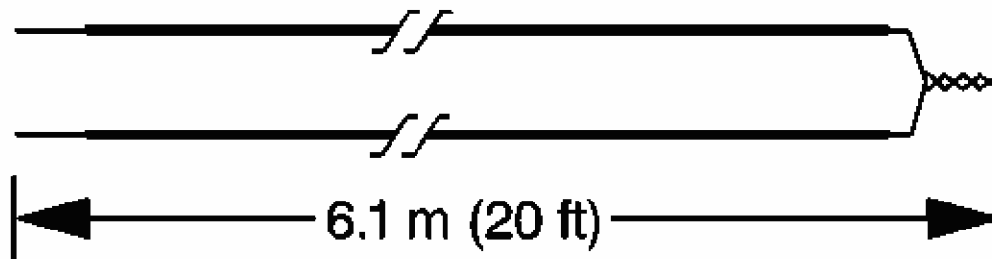
**Fig. 90: View Of Steering Wheel Module Coil Connector**  
Courtesy of GENERAL MOTORS CORP.

**CAUTION:** A deployed dual stage inflator module will look the same whether one or both stages were used. Always assume a deployed dual stage inflator module has an active stage 2. Improper handling or servicing can activate the inflator module and cause personal injury.

6. Disconnect the steering wheel module coil yellow connector (2) from the vehicle harness connector (6).
7. Disconnect the I/P module connector (3) from the vehicle harness connector (1).

**IMPORTANT:** This vehicle is equipped with dual stage air bags, the steering wheel module and I/P module will have 4 wires each. Refer to SIR Connector End Views for determining high and low circuits.

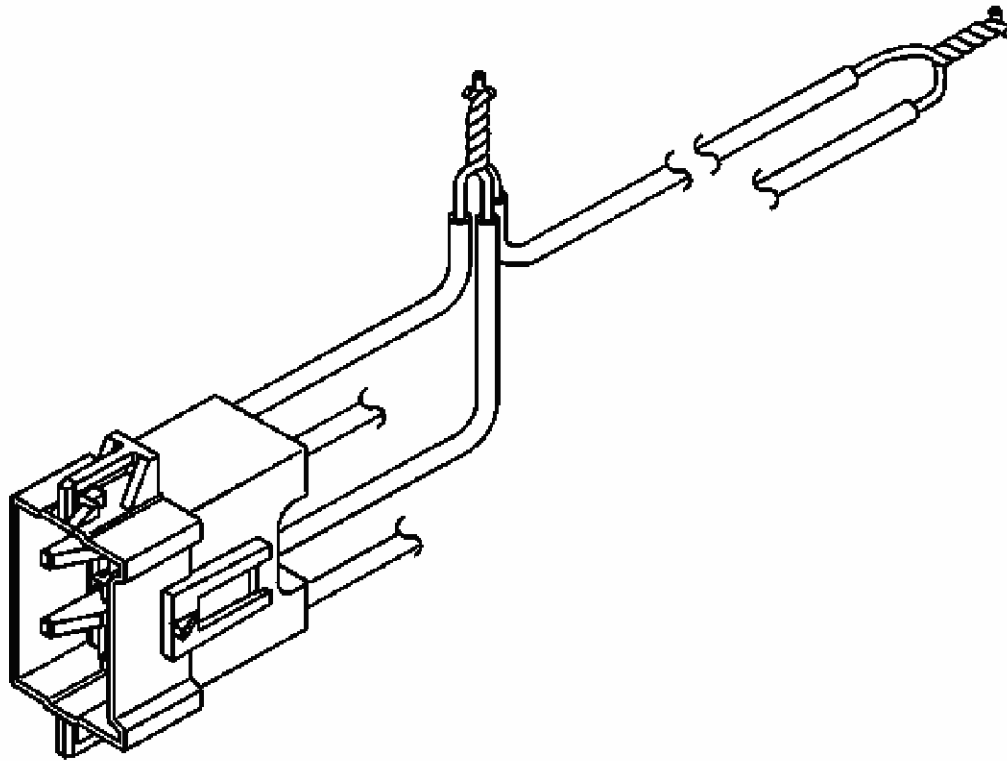
8. Cut both yellow harness connectors out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
9. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.



**Fig. 91: Fabricating 20 Ft. Deployment Harness**  
Courtesy of GENERAL MOTORS CORP.

10. Cut four 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. Use these wires to fabricate the driver and I/P deployment harness.
11. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
12. Twist together one end from each of the wires in order to short the wires then perform

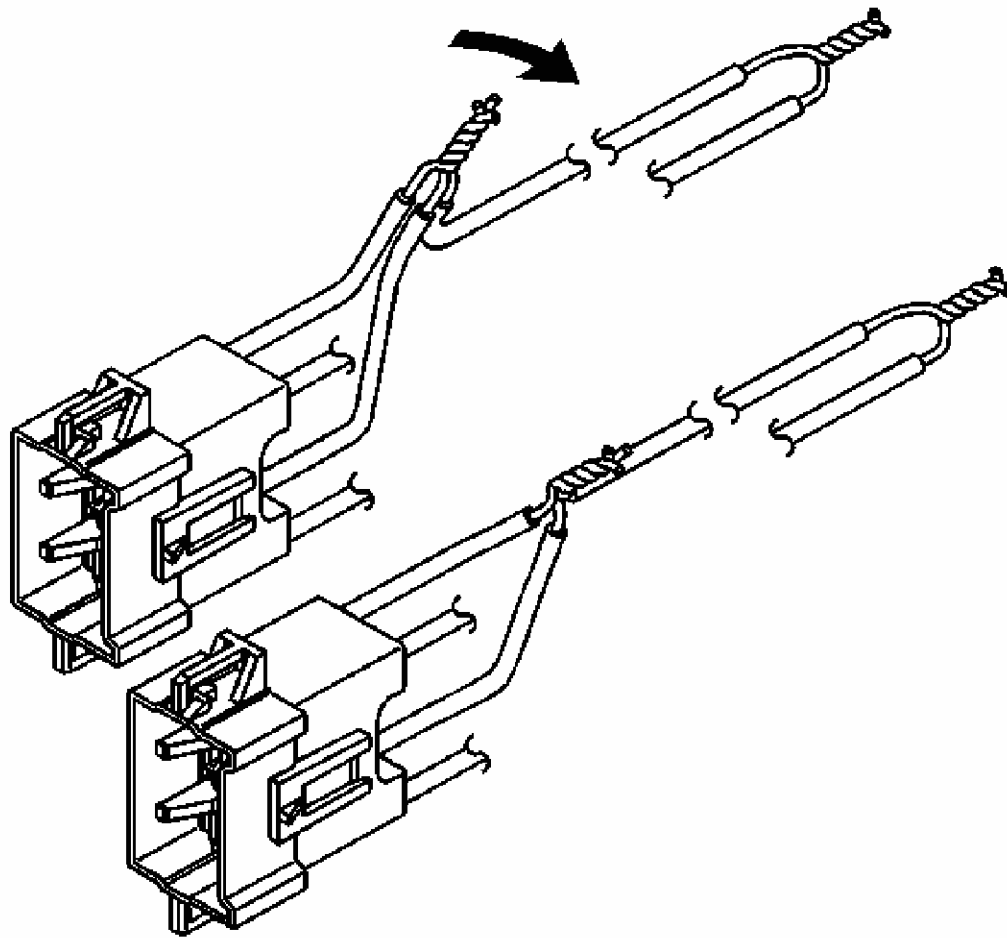
this step for the I/P module deployment. Deployment wires shall remain shorted and not connected to a power source until you are ready to deploy the inflator module.



**Fig. 92: Twisting Connector Wire Leads (High Circuits) To Deployment Harness Wire**

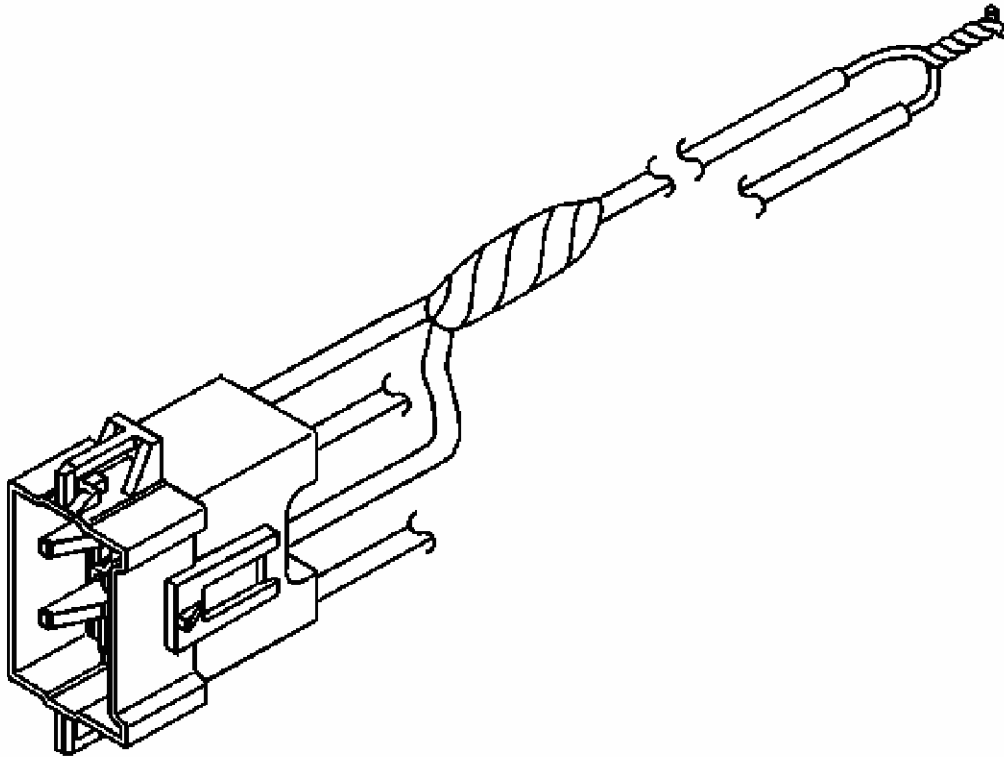
Courtesy of **GENERAL MOTORS CORP.**

13. Twist together 2 connector wire leads (the high circuits from both stages of the steering wheel module) to one sets of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
14. Then twist together 2 connector wire leads (the high circuits from both stages of the I/P module) to one sets of deployment wires.
15. Inspect that the 3 wire connection is secure.



**Fig. 93: Bending Twisted Connection Flat**  
**Courtesy of GENERAL MOTORS CORP.**

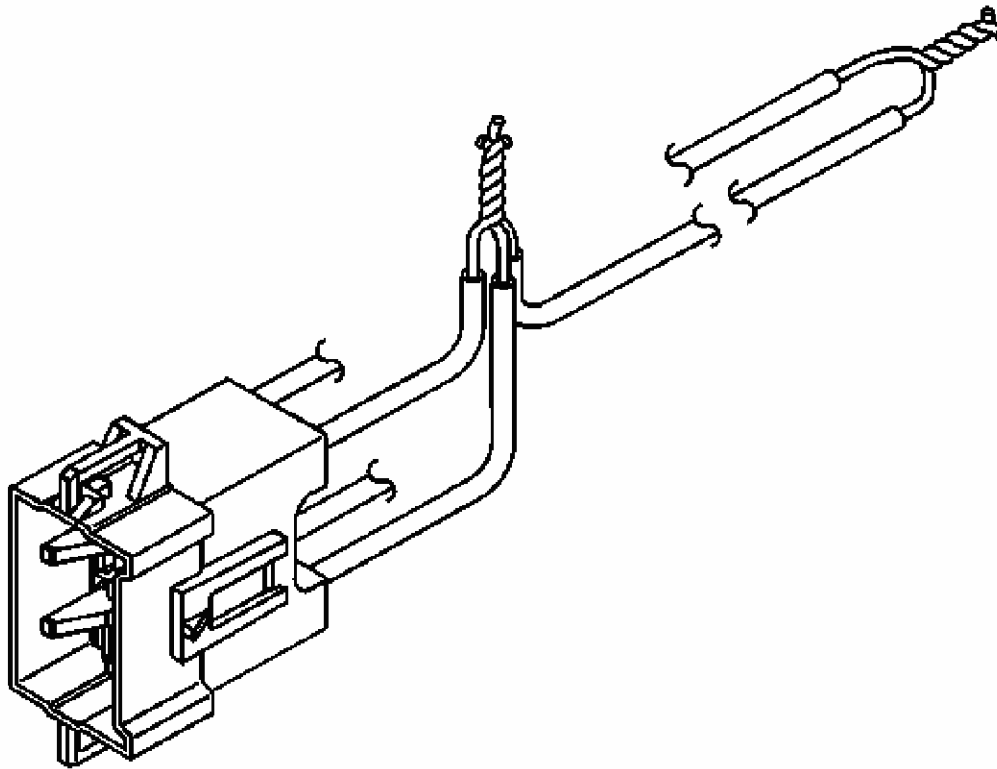
16. Bend flat the twisted connection to each connector.



**Fig. 94: Insulating Connection With Electrical Tape**  
**Courtesy of GENERAL MOTORS CORP.**

17. Secure and insulate the 3 wire connection to each deployment harness using electrical tape.

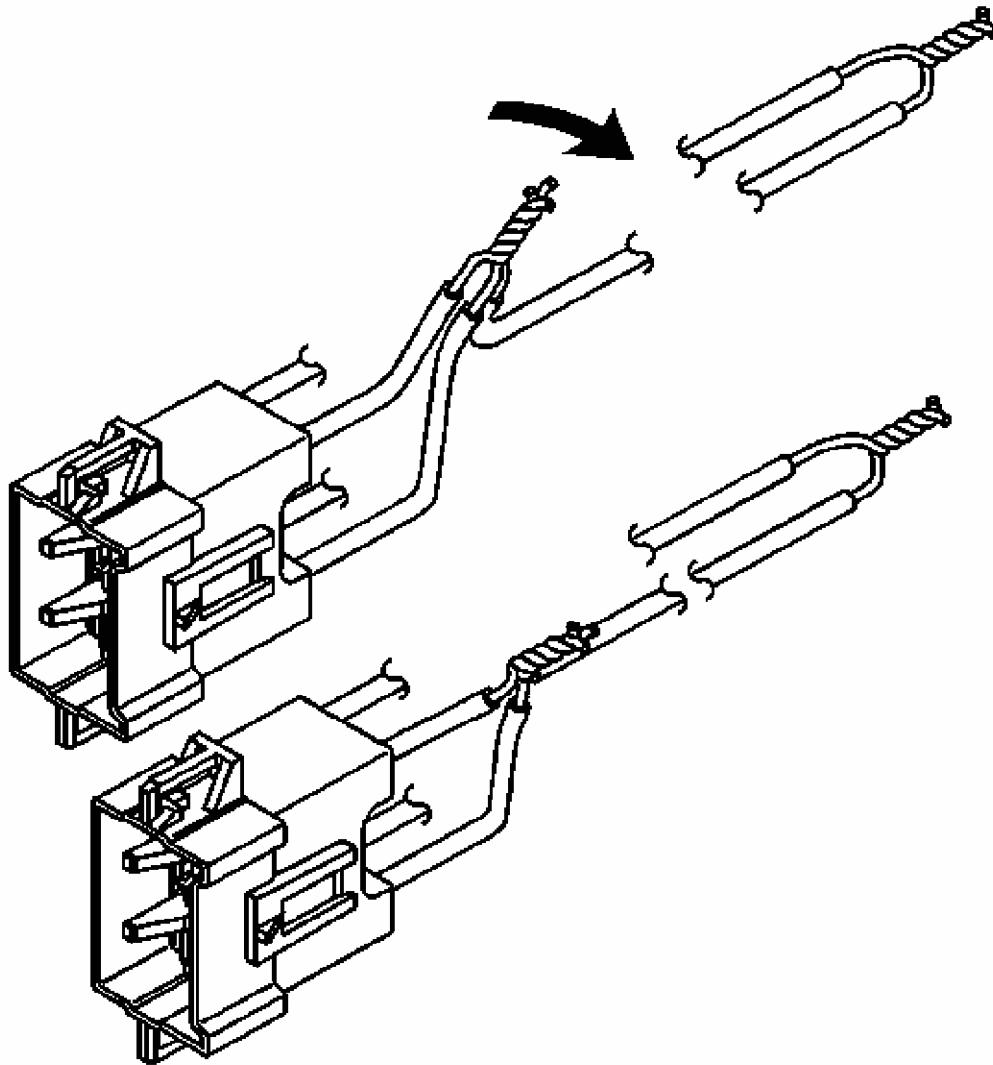




**Fig. 95: Twisting Connector Wire Leads (Low Circuits) To Deployment Harness Wire**

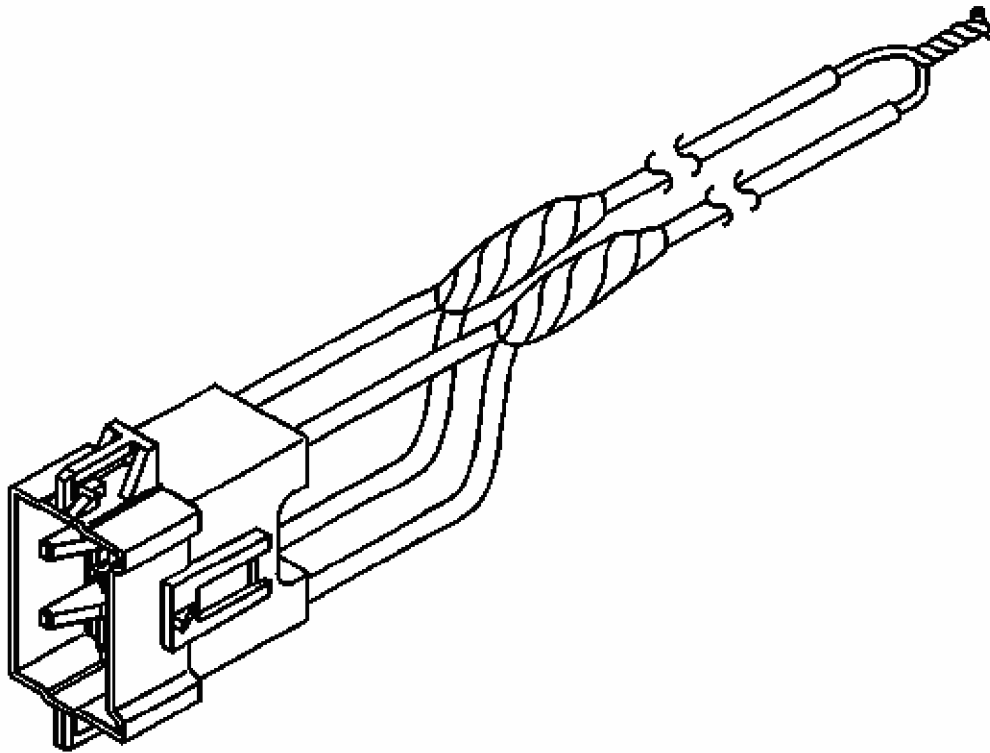
**Courtesy of GENERAL MOTORS CORP.**

18. Twist together 2 connector wire leads (the low circuits from both stages of the steering wheel module) to one sets of deployment wires. Refer to **SIR Connector End Views** in order to determine the correct circuits.
19. Then twist together 2 connector wire leads (the low circuits from both stages of the I/P module) to one sets of deployment wires.
20. Inspect that the 3 wire connection is secure.



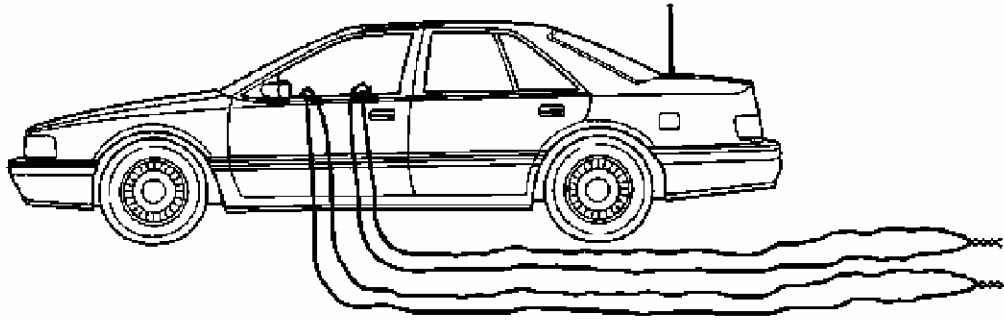
**Fig. 96: Bending Twisted Connection Flat**  
**Courtesy of GENERAL MOTORS CORP.**

21. Bend flat the twisted connection for each connector.



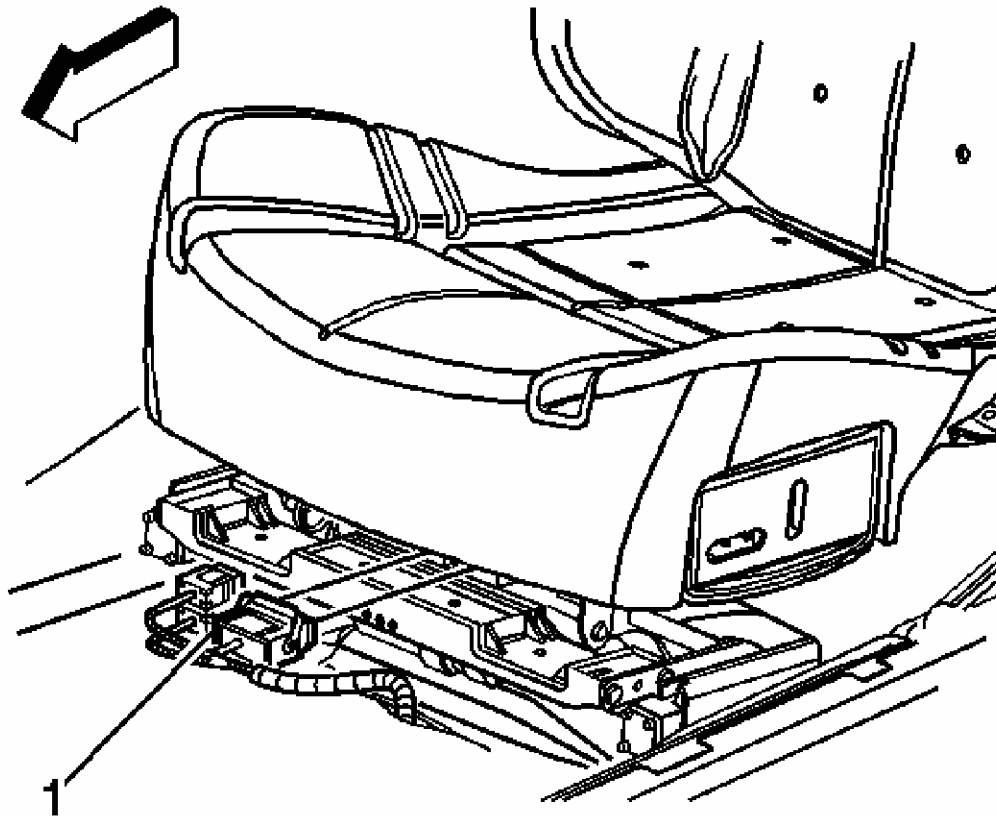
**Fig. 97: Insulating Connection With Electrical Tape**  
**Courtesy of GENERAL MOTORS CORP.**

22. Secure and insulate the 3 wire connection to each deployment harness using electrical tape.
23. Connect the deployment harness to the steering wheel module in-line connector.
24. Connect the deployment harness to the I/P module connector.



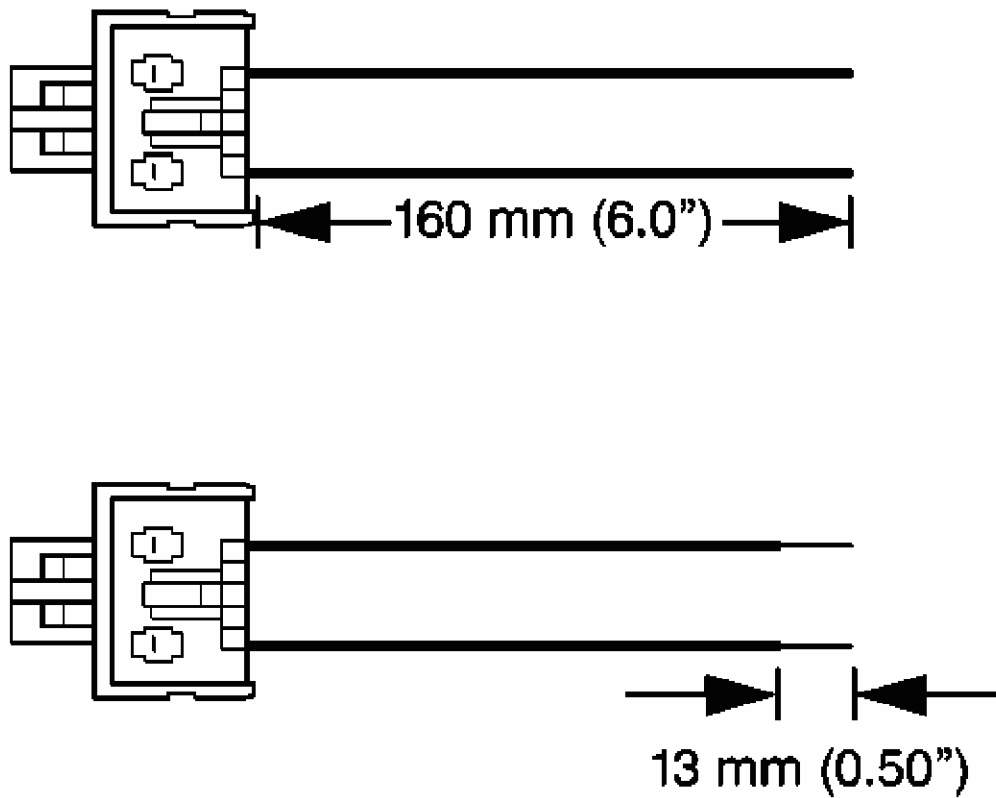
**Fig. 98: Routing Deployment Harness Out Driver Side Window**  
**Courtesy of GENERAL MOTORS CORP.**

25. Route both deployment harness out of the driver side of the vehicle.



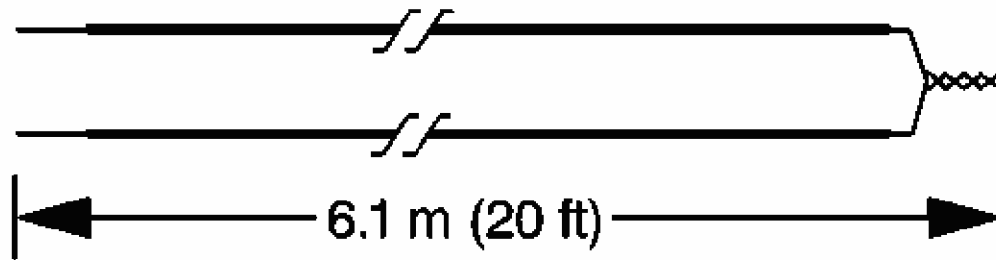
**Fig. 99: Locating RF Side Impact Module & Pretensioner Yellow Connector**  
**Courtesy of GENERAL MOTORS CORP.**

26. Disconnect the driver/left side air bag yellow connector (1) from the vehicle wiring harness located under the front of driver seat.



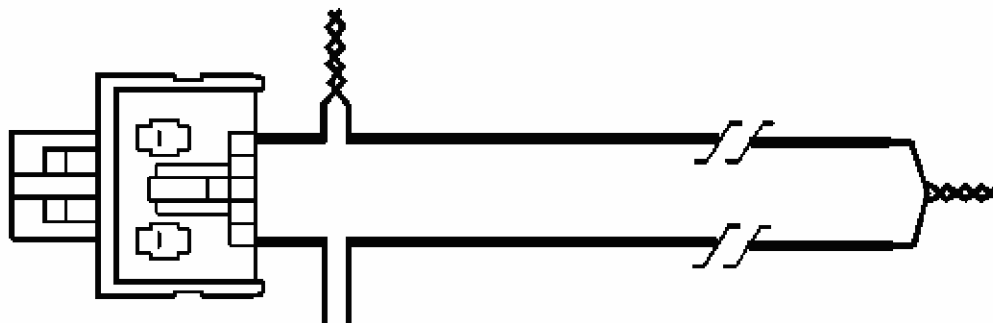
**Fig. 100: Identifying Proper Stripping Of Connection Wire Leads**  
**Courtesy of GENERAL MOTORS CORP.**

27. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
28. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.



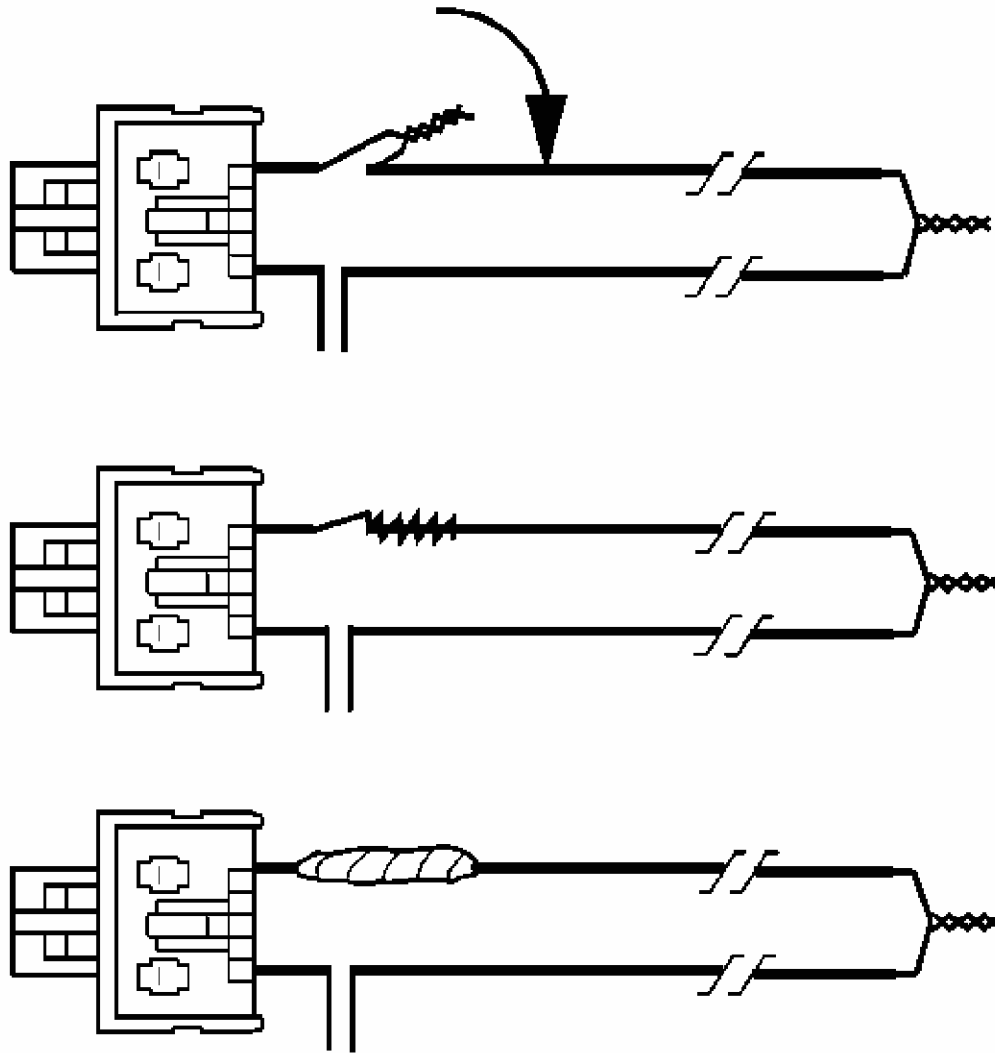
**Fig. 101: Fabricating 20 Ft. Deployment Harness**  
**Courtesy of GENERAL MOTORS CORP.**

29. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the side air bag deployment harness.
30. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
31. Twist together one end from each of the wires in order to short the wires.



**Fig. 102: View Of Proper Twisting Of Connector Wire Lead To Deployment Wire**  
**Courtesy of GENERAL MOTORS CORP.**

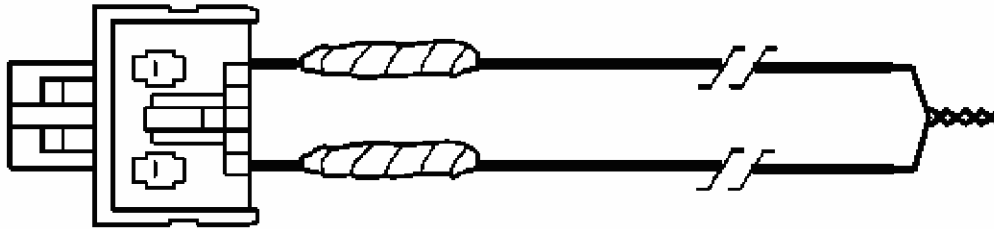
32. Twist together one connector wire lead to one deployment wire.



**Fig. 103: Bending Twisted Connection Flat & Insulating With Tape**  
**Courtesy of GENERAL MOTORS CORP.**

33. Bend flat the twisted connection.
34. Secure and insulate the connection using electrical tape.

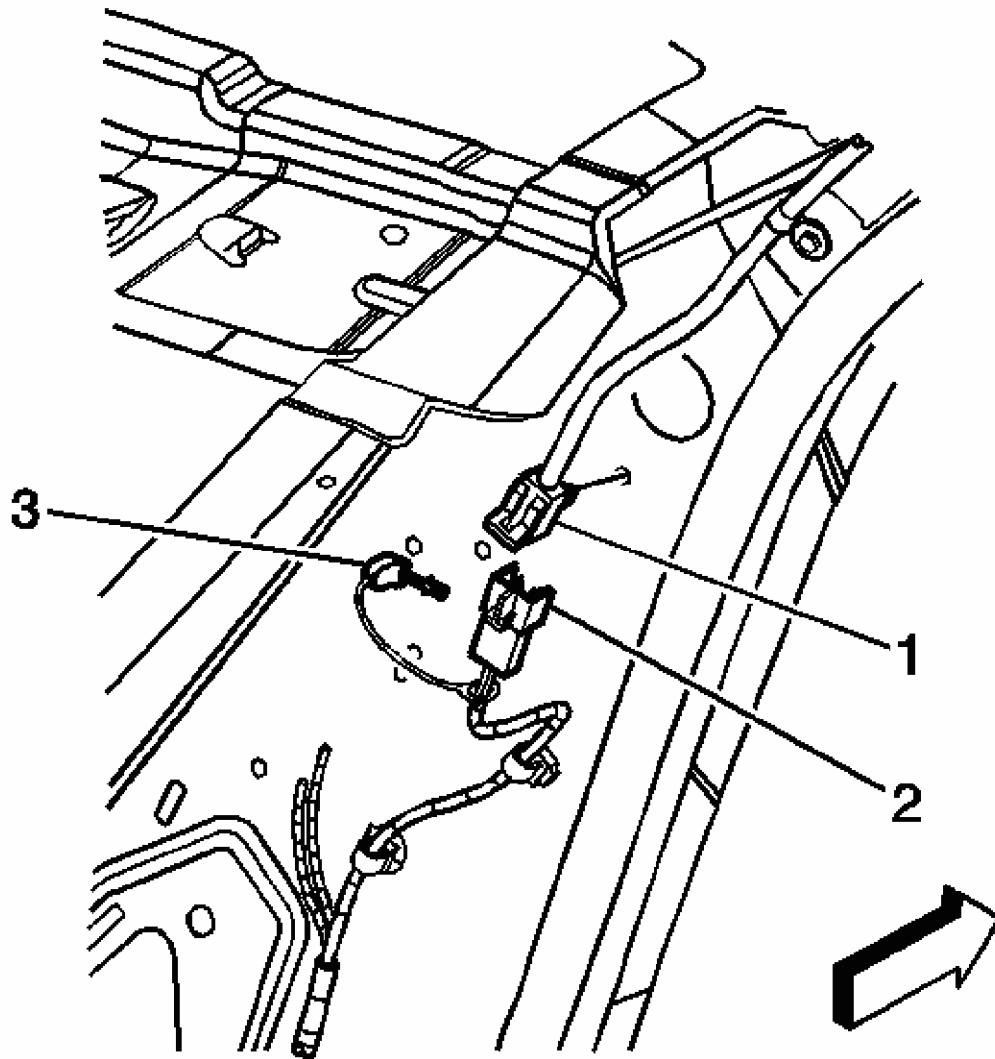




**Fig. 104: Taping Remaining Connector Wire Lead To Remaining Deployment Wire**

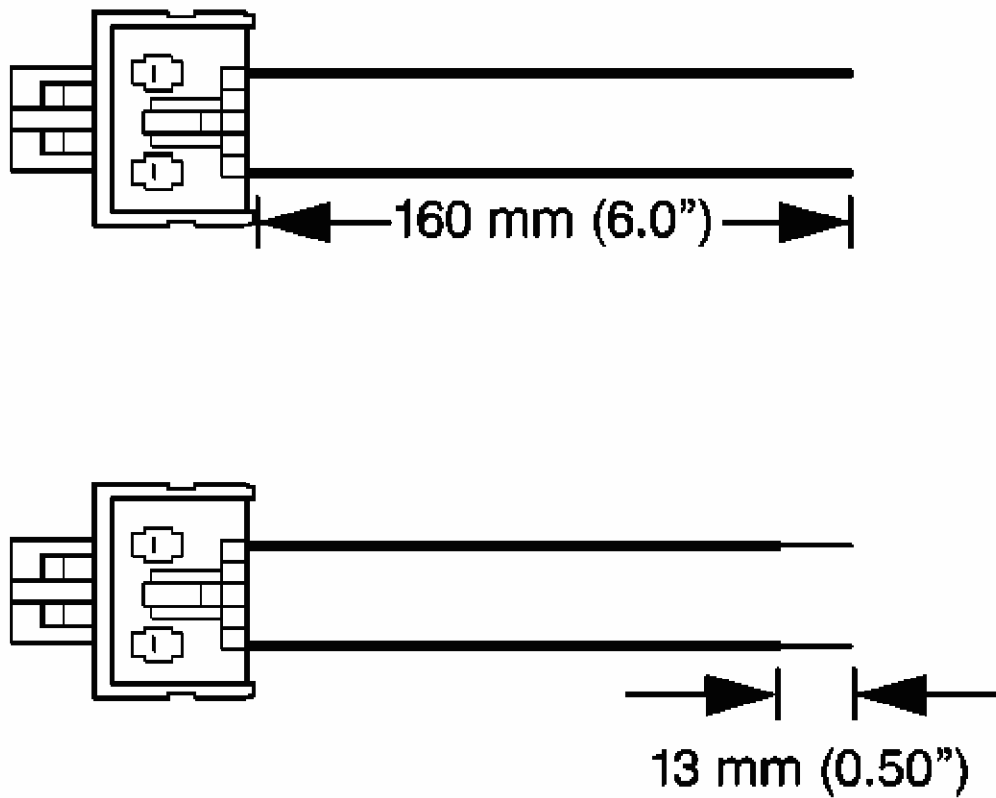
**Courtesy of GENERAL MOTORS CORP.**

35. Twist together, bend and tape the remaining connector wire lead to the remaining deployment wire.
36. Connect the deployment harness to the side air bag yellow connector.
37. Route the deployment harness out of the driver side of the vehicle.



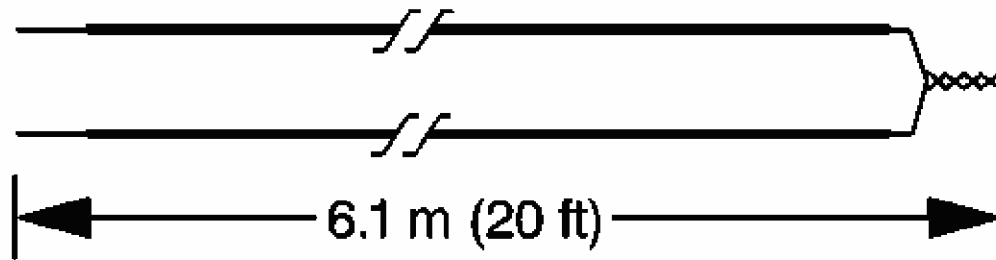
**Fig. 105: Connector Position Assurance, Left/Driver Roof Rail Module Connector & Left Roof Rail Module Yellow Connector**  
Courtesy of GENERAL MOTORS CORP.

38. Disconnect the left/driver roof rail air bag yellow harness connector (1) from the vehicle harness connector (2).



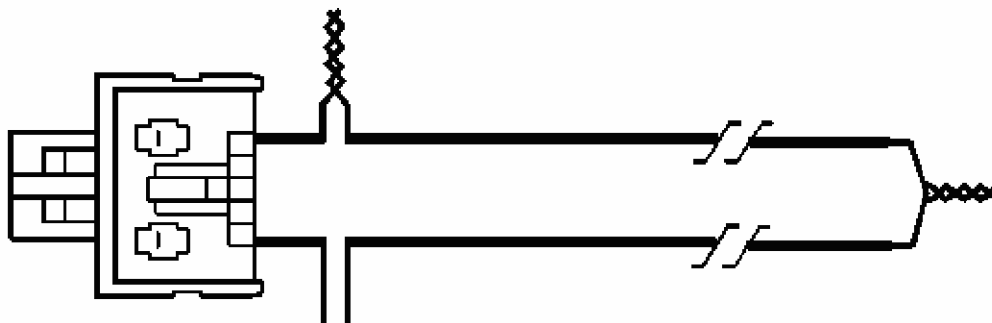
**Fig. 106: Identifying Proper Stripping Of Connection Wire Leads**  
**Courtesy of GENERAL MOTORS CORP.**

39. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
40. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.



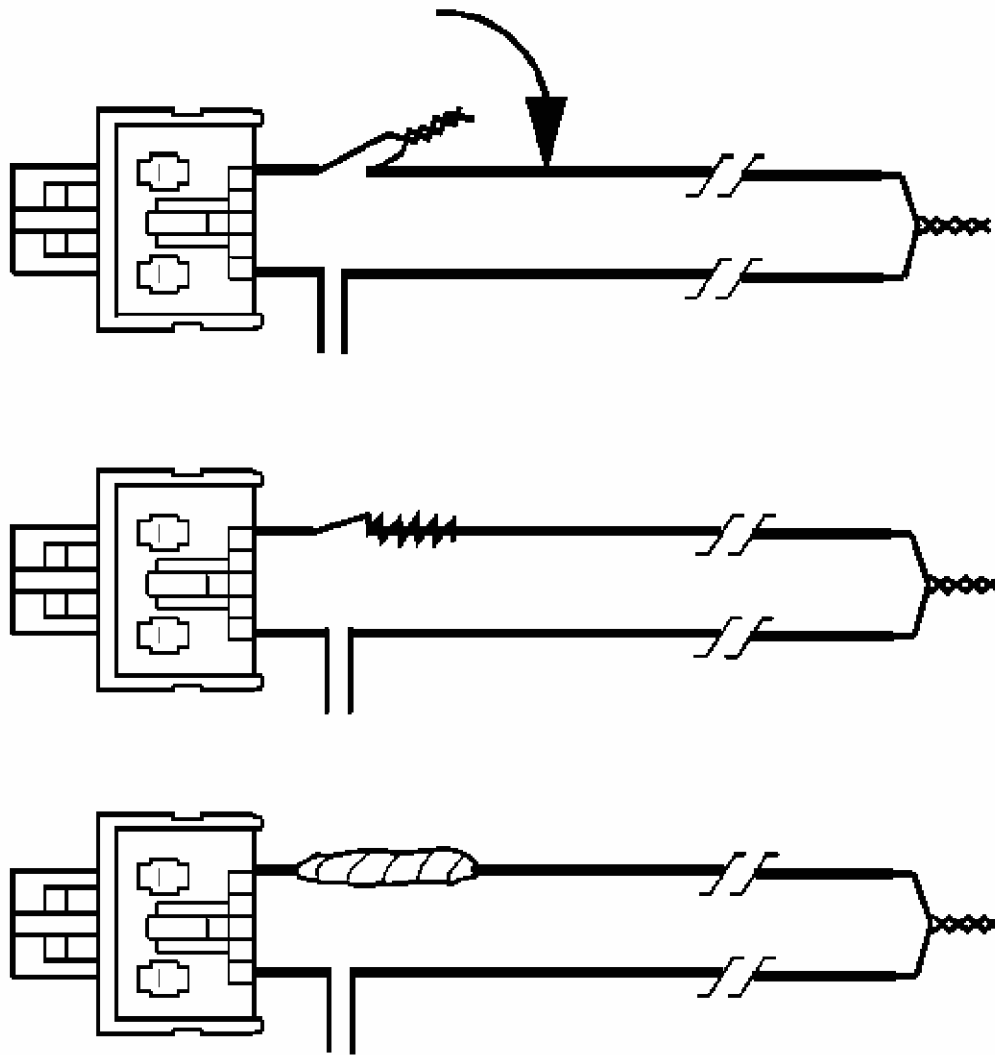
**Fig. 107: Fabricating 20 Ft. Deployment Harness**  
Courtesy of GENERAL MOTORS CORP.

41. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
42. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
43. Twist together one end from each of the wires in order to short the wires.



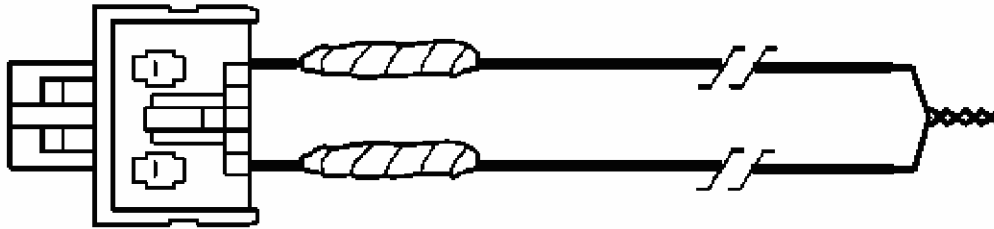
**Fig. 108: View Of Proper Twisting Of Connector Wire Lead To Deployment Wire**  
Courtesy of GENERAL MOTORS CORP.

44. Twist together one connector wire lead to one deployment wire.



**Fig. 109: Bending Twisted Connection Flat & Insulating With Tape**  
Courtesy of GENERAL MOTORS CORP.

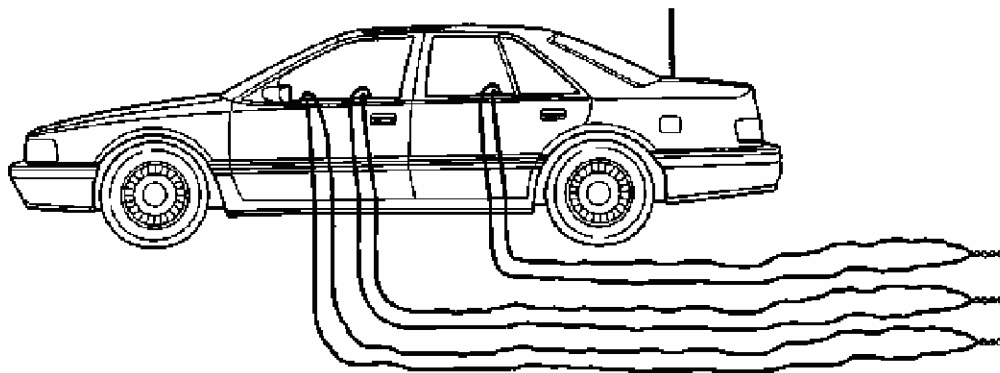
45. Bend flat the twisted connection.
46. Secure and insulate the connection using electrical tape.



**Fig. 110: Taping Remaining Connector Wire Lead To Remaining Deployment Wire**

**Courtesy of GENERAL MOTORS CORP.**

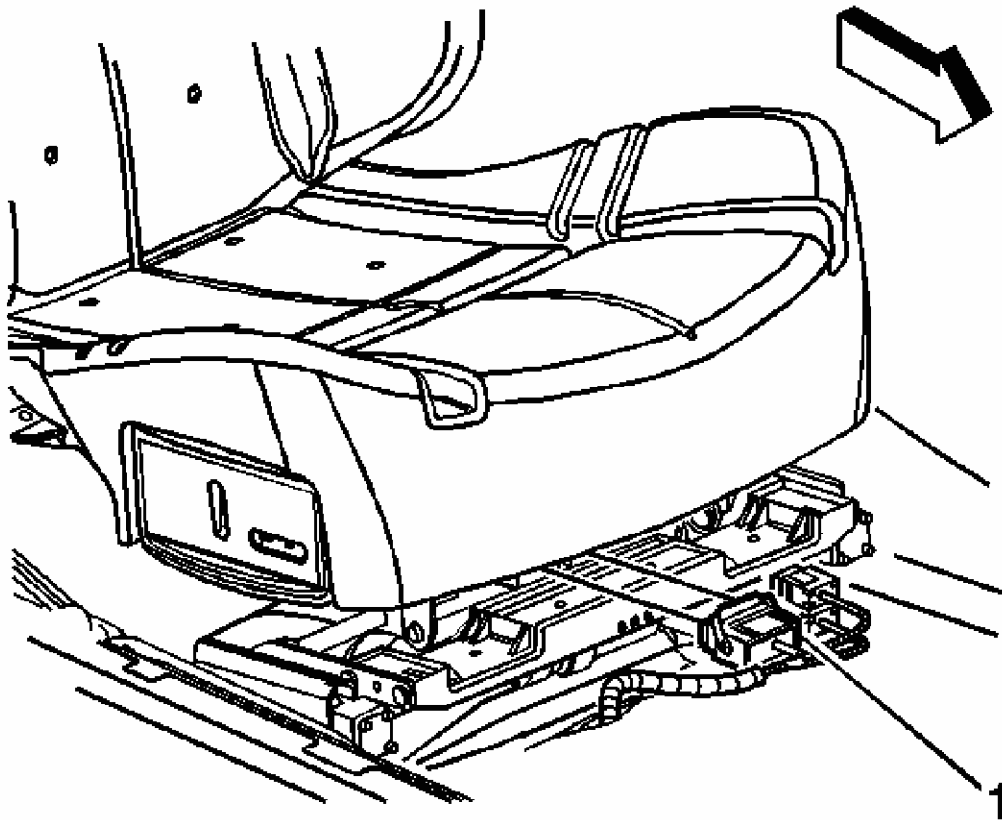
47. Twist together, bend and tape the remaining connector wire lead to the remaining deployment wire.
48. Connect the deployment harness to the roof rail air bag yellow connector.



**Fig. 111: Routing Deployment Harness Out of Driver Side**

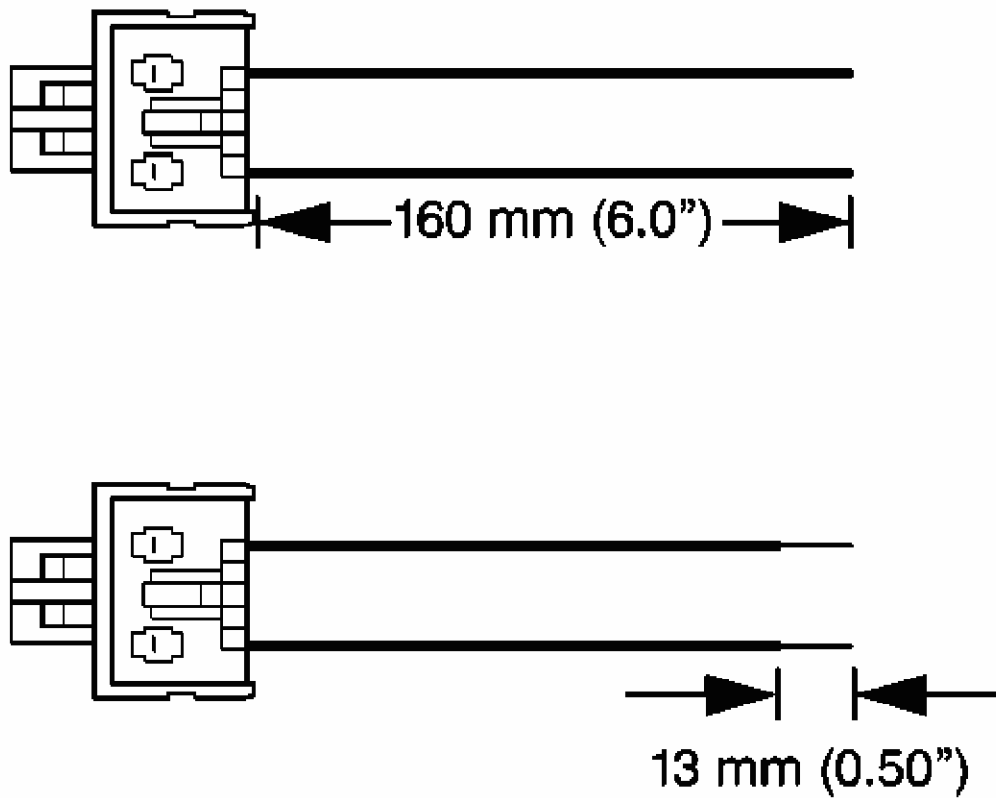
**Courtesy of GENERAL MOTORS CORP.**

49. Route the deployment harness out of the driver side of the vehicle.



**Fig. 112: Locating Side Impact Module & Pretensioner Yellow Connector**  
**Courtesy of GENERAL MOTORS CORP.**

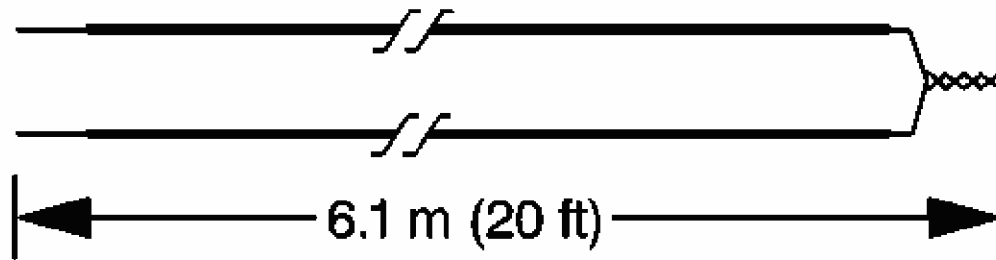
50. Disconnect the passenger side air bag yellow connector (1) from the vehicle wiring harness located under the front of passenger seat.



**Fig. 113: Identifying Proper Stripping Of Connection Wire Leads**  
**Courtesy of GENERAL MOTORS CORP.**

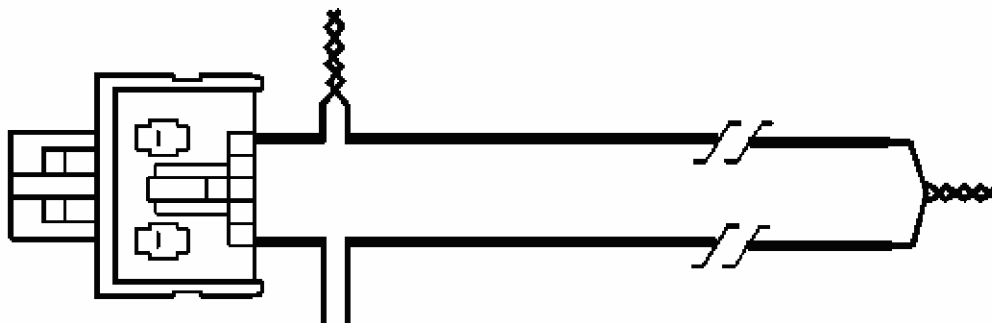
51. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
52. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.





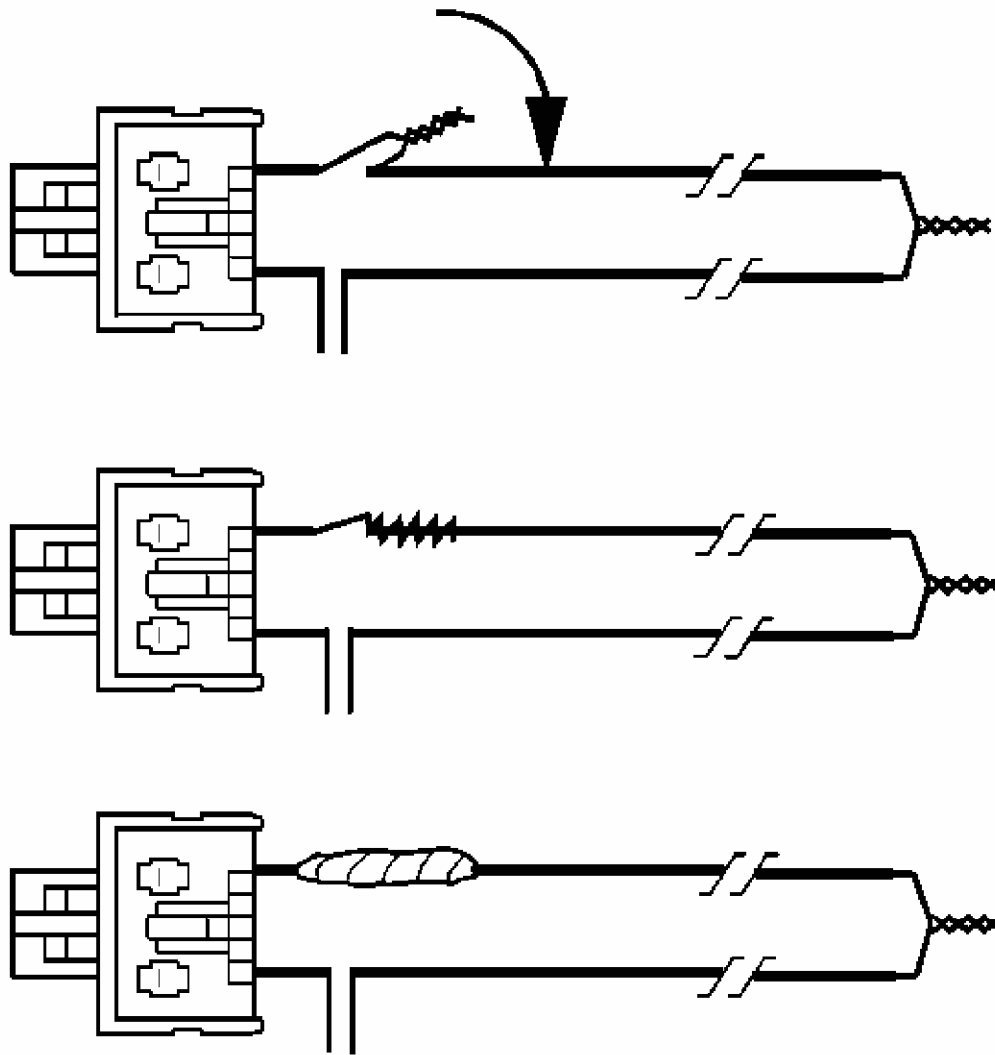
**Fig. 114: Fabricating 20 Ft. Deployment Harness**  
**Courtesy of GENERAL MOTORS CORP.**

53. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the side air bag deployment harness.
54. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
55. Twist together one end from each of the wires in order to short the wires.



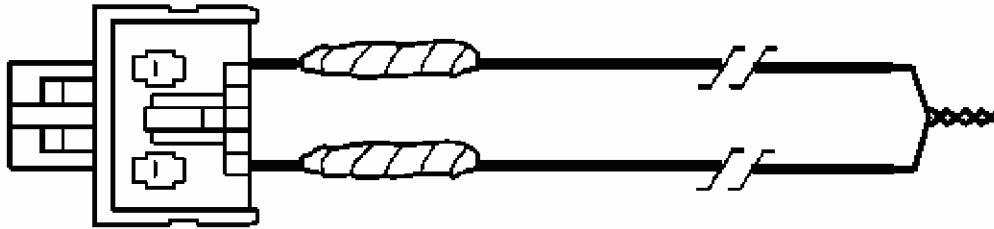
**Fig. 115: View Of Proper Twisting Of Connector Wire Lead To Deployment Wire**  
**Courtesy of GENERAL MOTORS CORP.**

56. Twist together one connector wire lead to one deployment wire.



**Fig. 116: Bending Twisted Connection Flat & Insulating With Tape**  
Courtesy of GENERAL MOTORS CORP.

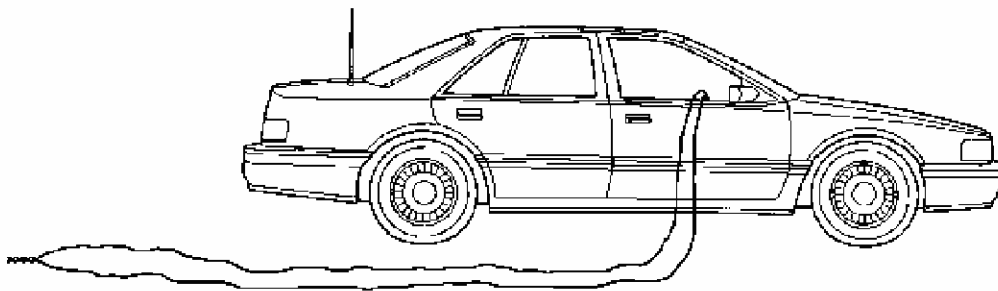
57. Bend flat the twisted connection.
58. Secure and insulate the connection using electrical tape.



**Fig. 117: Taping Remaining Connector Wire Lead To Remaining Deployment Wire**

**Courtesy of GENERAL MOTORS CORP.**

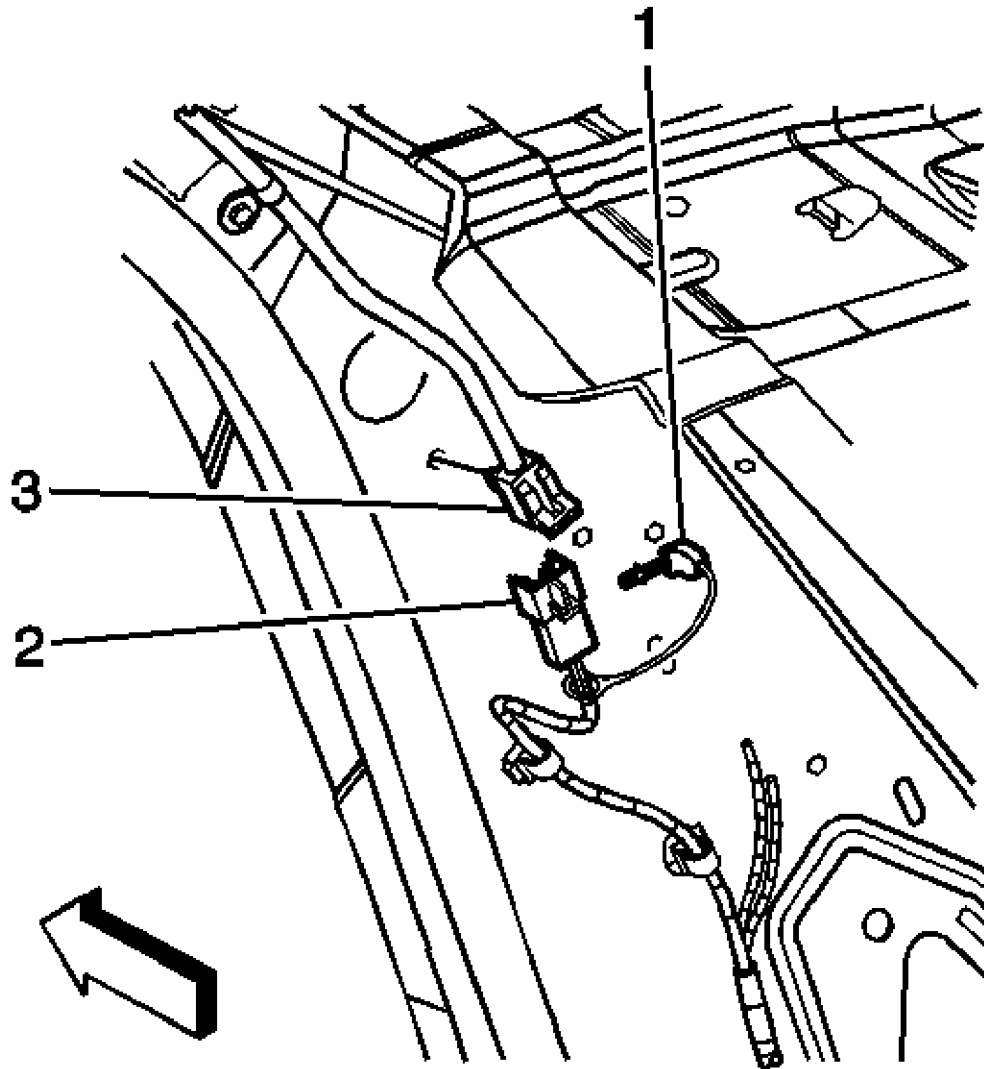
59. Twist together, bend and tape the remaining connector wire lead to the remaining deployment wire.
60. Connect the deployment harness to the side air bag yellow connector.



**Fig. 118: Routing Deployment Harness Out Passenger Side**

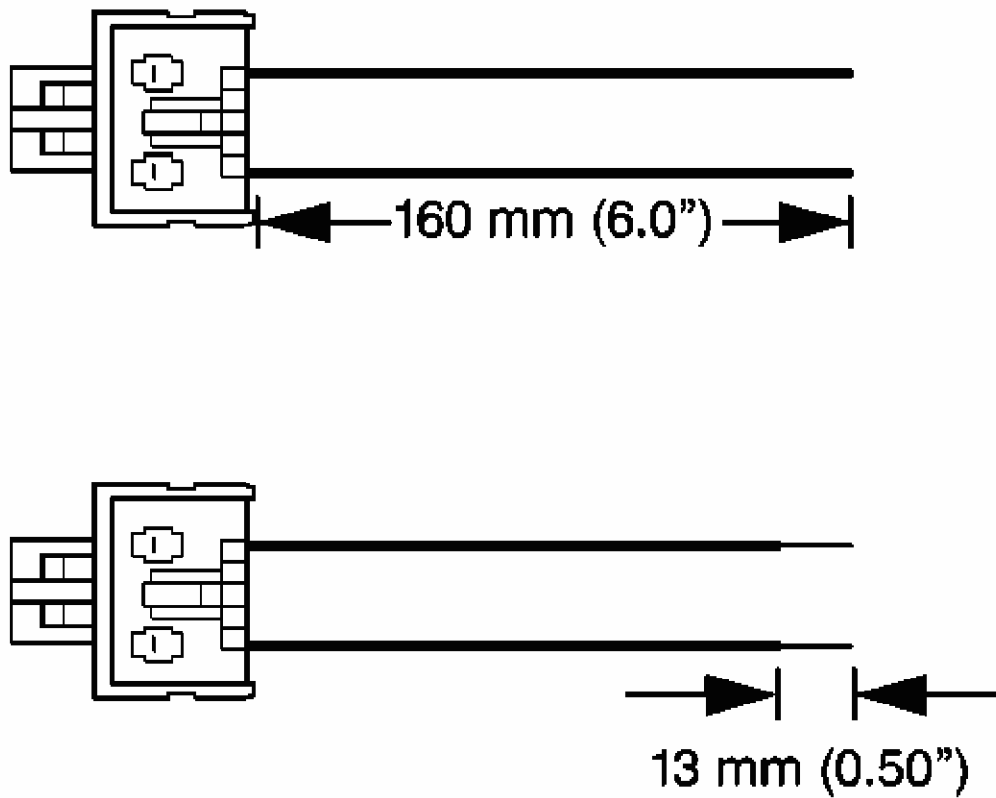
**Courtesy of GENERAL MOTORS CORP.**

61. Route the deployment harness out of the passenger side of the vehicle.



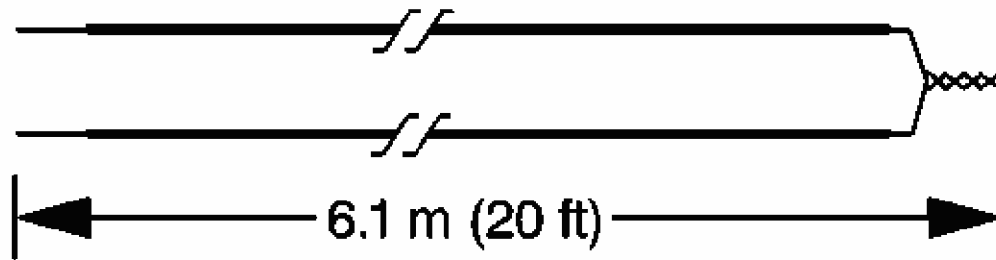
**Fig. 119: CPA, Right Roof Rail Module Yellow Connector & Vehicle Harness Yellow Connector**  
**Courtesy of GENERAL MOTORS CORP.**

62. Disconnect the right/passenger roof rail air bag yellow harness connector (3) from the vehicle harness connector (2).



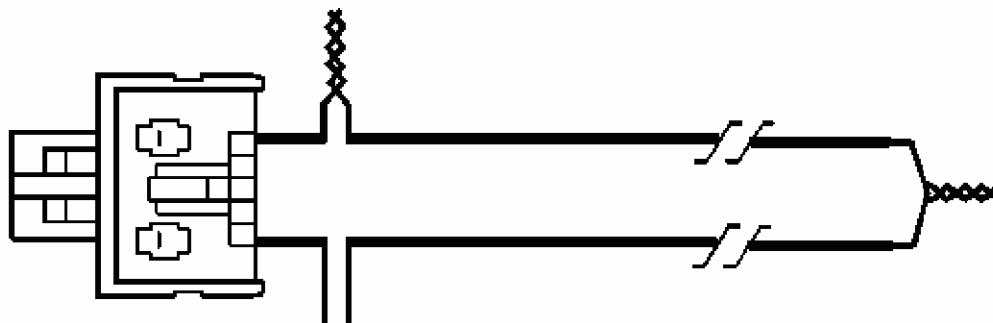
**Fig. 120: Identifying Proper Stripping Of Connection Wire Leads**  
**Courtesy of GENERAL MOTORS CORP.**

63. Cut the harness connector out of the vehicle, leaving at least 16 cm (6 in) of wire at the connector.
64. Strip 13 mm (0.5 in) of insulation from each of the connector wire leads.



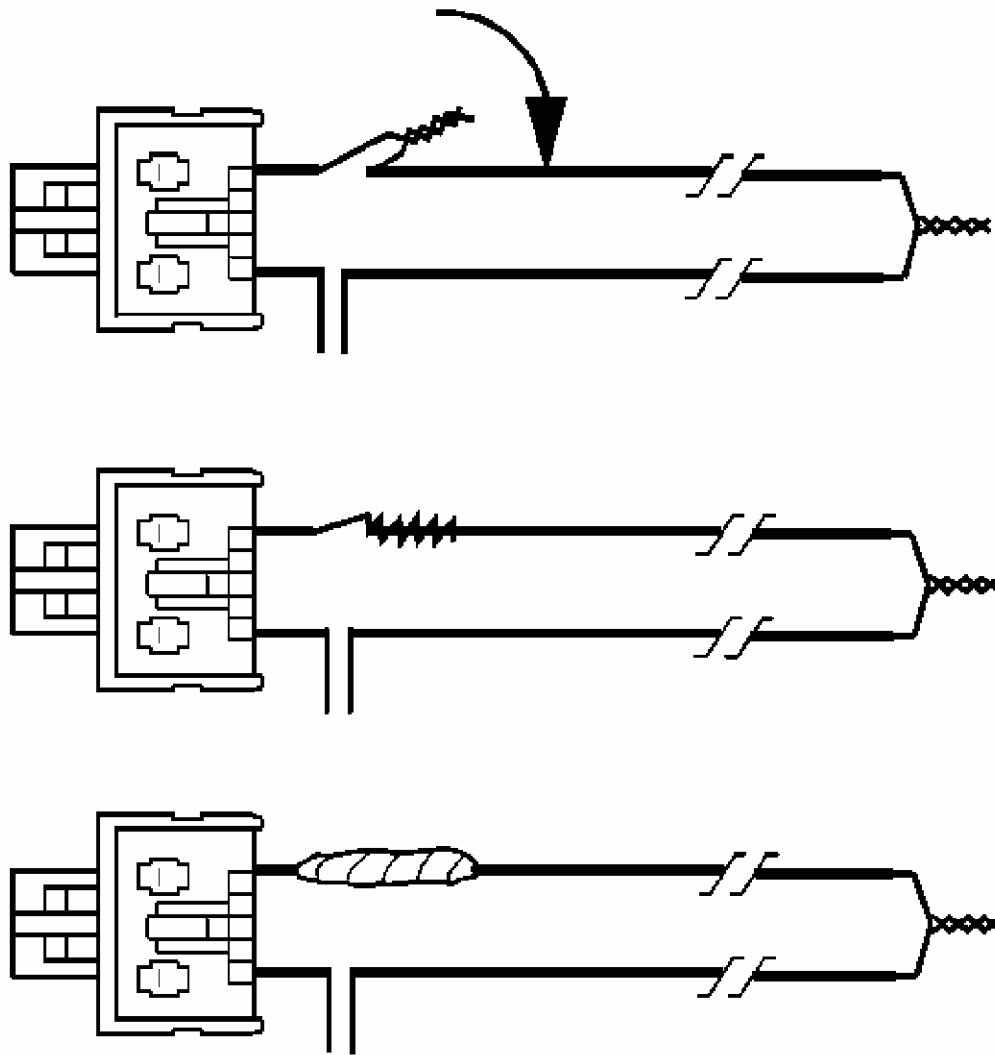
**Fig. 121: Fabricating 20 Ft. Deployment Harness**  
Courtesy of GENERAL MOTORS CORP.

65. Cut two 6.1 m (20 ft) deployment wires from a 0.8 mm (18 gage) or thicker multi-strand wire. These wires will be used to fabricate the roof rail air bag deployment harness.
66. Strip 13 mm (0.5 in) of insulation from both ends of the wires cut in the previous step.
67. Twist together one end from each of the wires in order to short the wires.



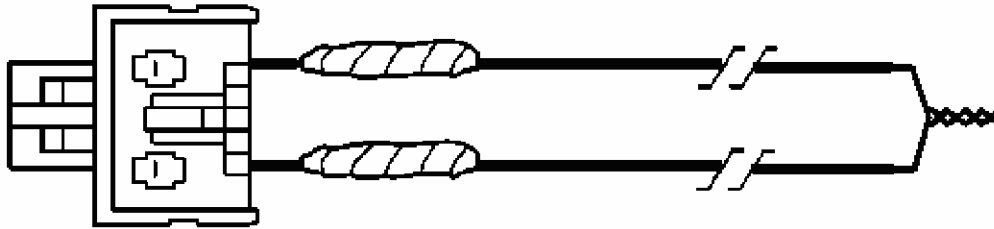
**Fig. 122: View Of Proper Twisting Of Connector Wire Lead To Deployment Wire**  
Courtesy of GENERAL MOTORS CORP.

68. Twist together one connector wire lead to one deployment wire.



**Fig. 123: Bending Twisted Connection Flat & Insulating With Tape**  
Courtesy of GENERAL MOTORS CORP.

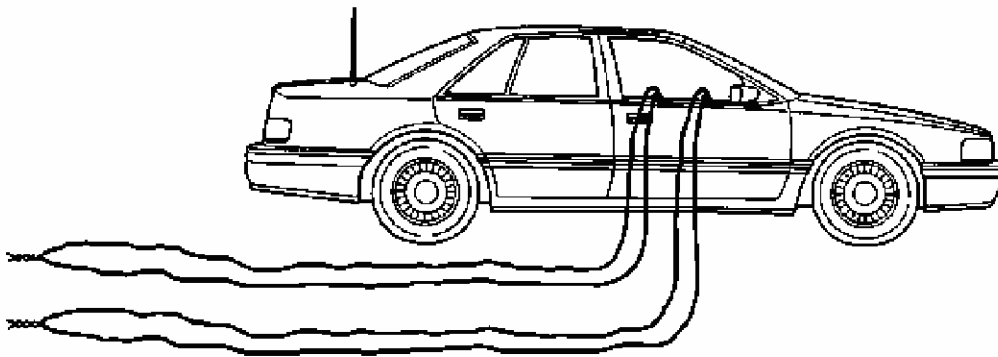
69. Bend flat the twisted connection.
70. Secure and insulate the connection using electrical tape.



**Fig. 124: Taping Remaining Connector Wire Lead To Remaining Deployment Wire**

**Courtesy of GENERAL MOTORS CORP.**

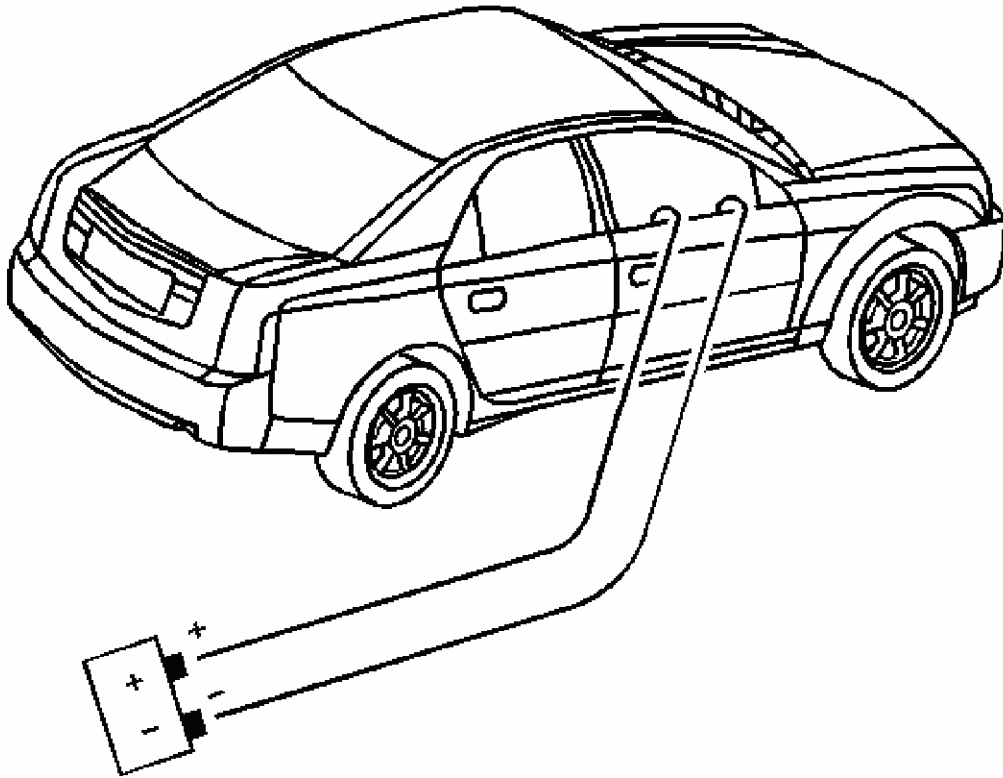
71. Twist together, bend and tape the remaining connector wire lead to the remaining deployment wire.
72. Connect the deployment harness to the roof rail air bag yellow connector.



**Fig. 125: Routing Deployment Harness Out Passenger Side**  
**Courtesy of GENERAL MOTORS CORP.**

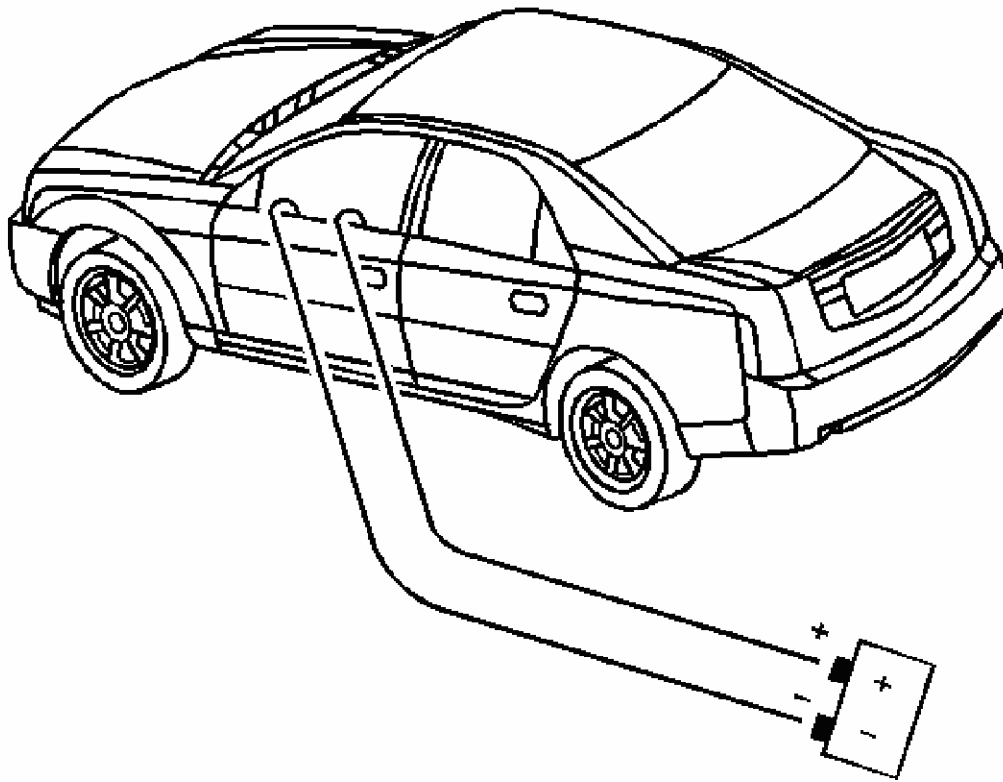
73. Route the deployment harness out of the passenger side of the vehicle.





**Fig. 126: Placing A Power Source Near Shorted End Of Harnesses**  
**Courtesy of GENERAL MOTORS CORP.**

74. Completely cover the windshield and front door window openings with a drop cloth.
75. Stretch out all of the deployment harness wires on the right side of the vehicle to their full length.
76. Deploy each deployment loop one at a time.
77. Place a power source, 12 V minimum/2 A minimum (i.e., a vehicle battery) near the shorted end of the harnesses.
78. Separate the one set of wires and touch the wires ends to the power source in order to deploy the inflator modules, doing one module at a time.
79. Disconnect the deployment harness from the power source and twist the wire ends together.
80. Continue the same process with the remaining deployment harnesses that are available.



**Fig. 127: Placing Power Source, 12 V minimum/2 A minimum Near Shorted End Of Harnesses**

**Courtesy of GENERAL MOTORS CORP.**

81. Stretch out all of the deployment harness wires on the left side of the vehicle to their full length.
82. Deploy each deployment loop one at a time.
83. Place a power source, 12 V minimum/2 A minimum (i.e., a vehicle battery) near the shorted end of the harnesses.
84. Separate the one set of wires and touch the wires ends to the power source in order to deploy the inflator modules, doing one module at a time.
85. Disconnect the deployment harness from the power source and twist the wire ends together.
86. Continue the same process with the remaining deployment harnesses that are available.
87. Remove the drop cloth from the vehicle.
88. Disconnect all harnesses from the vehicle.
89. Discard the harnesses.

90. Scrap the vehicle in the same manner as a non-SIR equipped vehicle.
91. If one or all of the inflator modules did not deploy, perform the following steps to remove the undeployed modules from the vehicle and deploy separately:
  - **Inflatable Restraint Steering Wheel Module Replacement**
  - **Inflatable Restraint Instrument Panel Module Replacement**
  - **Inflatable Restraint Side Impact Module Replacement - Front**
  - **Roof Side Rail Inflatable Restraint Module Replacement**

#### **PRETENSIONER HANDLING AND SCRAPPING**

**CAUTION:** When carrying an undeployed inflatable restraint seat belt retractor pretensioner:

- Do not carry the seat belt pretensioner by the seat belt webbing or pigtail connector, if equipped.
- Carry the seat belt pretensioner by the housing, keeping hands and fingers away from the seat belt webbing.
- Make sure the opening, from which the seat belt webbing extends, faces downward and the seat belt webbing hangs freely.

**Failure to observe these guidelines may result in personal injury.**

#### **Tools Required**

- **J 38826** SIR Deployment Harness. See **Special Tools**.
- J 38826-25 for seat belt pretensioner module adapter
- **J 39401-B** SIR Deployment Fixture. See **Special Tools**.
- An appropriate pigtail adaptor

#### **Scrapping Procedure**

During the course of a vehicles useful life, certain situations may arise which will require the disposal of a live and undeployed seat belt retractor pretensioner. Do not dispose of a live and undeployed seat belt pretensioner through normal disposal channels until the seat belt pretensioner has been deployed. The following information covers the proper procedures for disposing of a live and undeployed seat belt pretensioner. Do not deploy the seat belt retractor pretensioner in the following situations:

- After replacement of a seat belt retractor pretensioner under warranty. The seat belt retractor pretensioner may need to be returned undeployed to the manufacturer.
- If the vehicle is the subject of a Product Liability report, GM1241, related to the SIR system or the seat belt system. If the vehicle is subject to the Product Liability report, do not alter the SIR or seat belt system in any manner.
- If the vehicle is involved in a campaign affecting the seat belt retractor pretensioners. Follow the instructions in the Campaign Service Bulletin for proper SIR handling procedures.

#### **Deployment Procedures**

The seat belt pretensioner can be deployed inside or outside of the vehicle. The method used depends upon the final disposition of the vehicle. Review the following procedures in order to determine which will work best in a given situation.

#### **Deployment Inside the Vehicle**

Refer to **Inflator Module Handling and Scrapping** for deploying the pretensioner inside vehicle under Vehicle Scrapping Procedure.

#### **Deployment Outside Vehicle for Seat Belt Pretensioners**

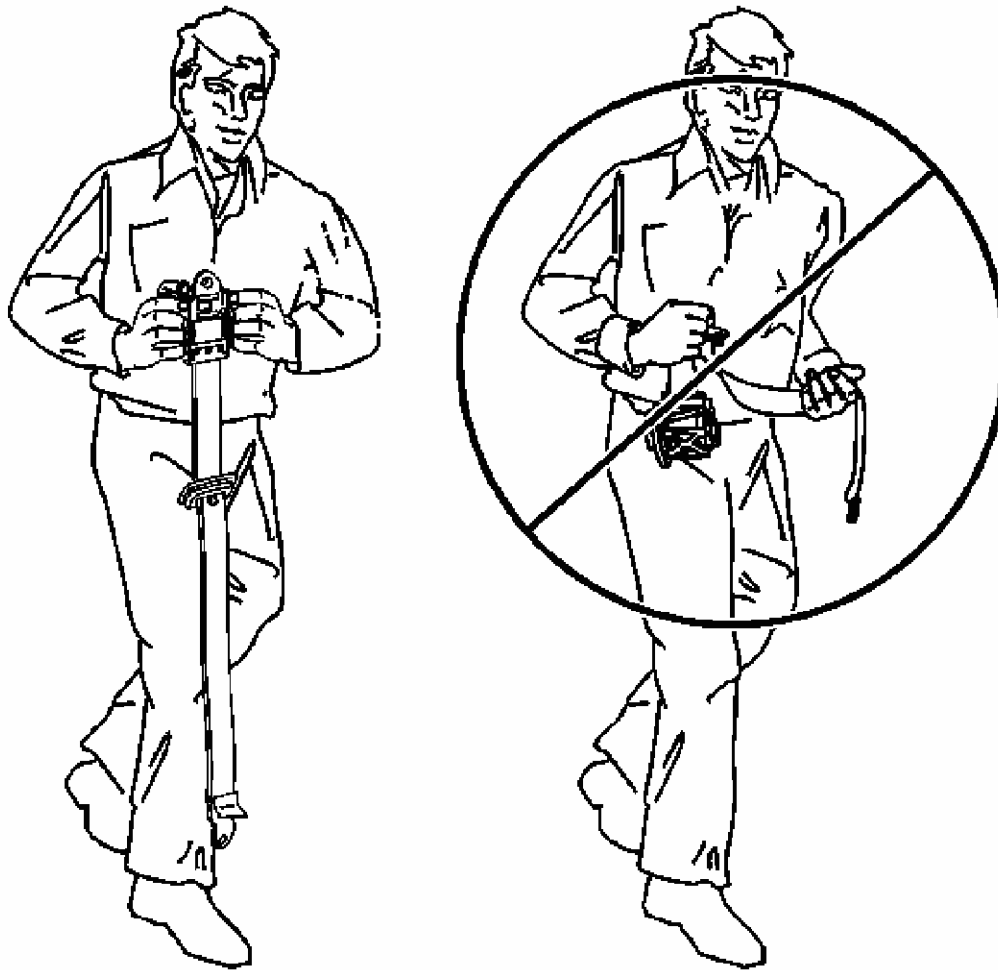
Deploy the seat belt pretensioners outside of the vehicle when the vehicle will be returned to service. Situations that require deployment outside of the vehicle include the following:

- Using the SIR diagnostics, it is determined that the seat belt pretensioner is malfunctioning.
- The seat belt pretensioner pigtail, if equipped, is damaged.
- The seat belt retractor pretensioner connector is damaged.
- The seat belt retractor pretensioner connector terminals are damaged.

Deployment and disposal of a malfunctioning seat belt pretensioner is subject to any required retention period.

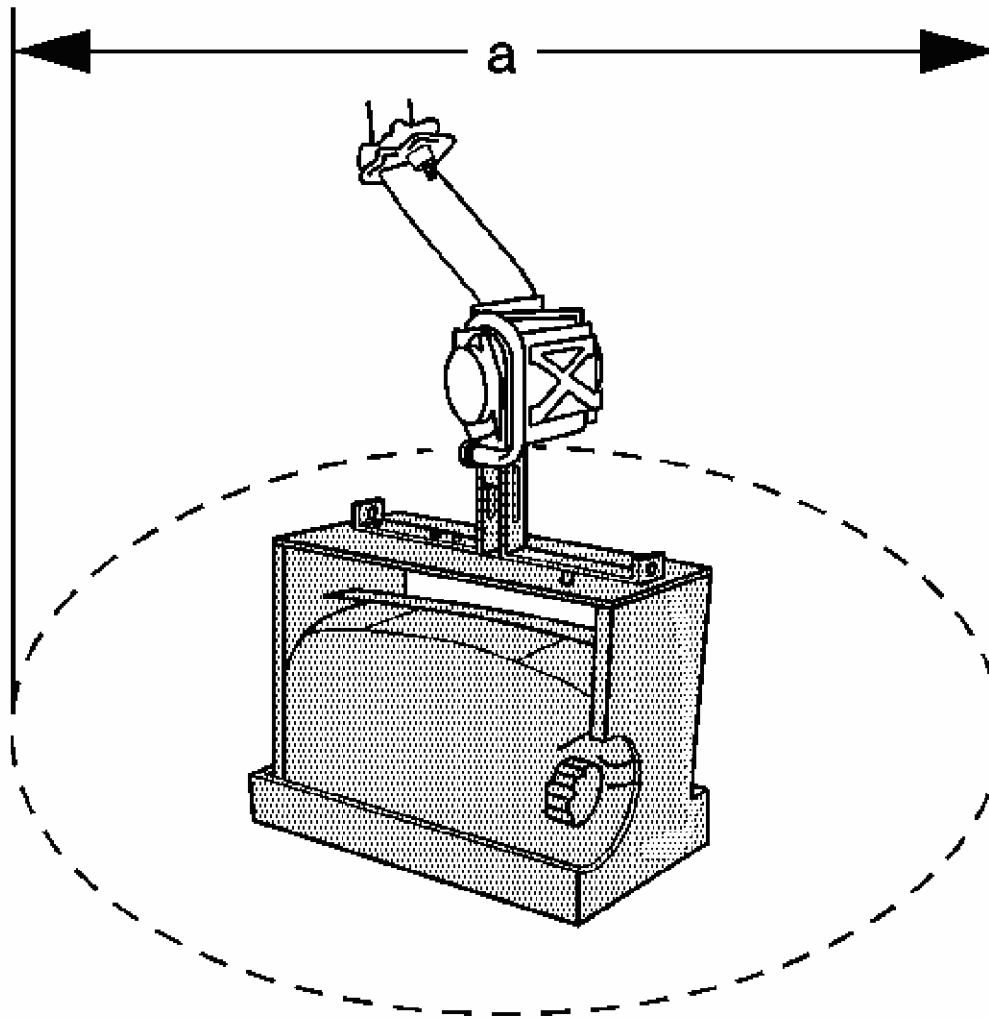
**CAUTION:** In order to prevent accidental deployment and the risk of personal injury, do not dispose of an undeployed inflatable restraint seat belt pretensioner as normal shop waste. Undeployed seat belt pretensioners contain substances that could cause severe illness or personal injury if their sealed containers are damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed seat belt pretensioner. Failure to observe the following disposal methods may be a violation of federal,

state or local laws.



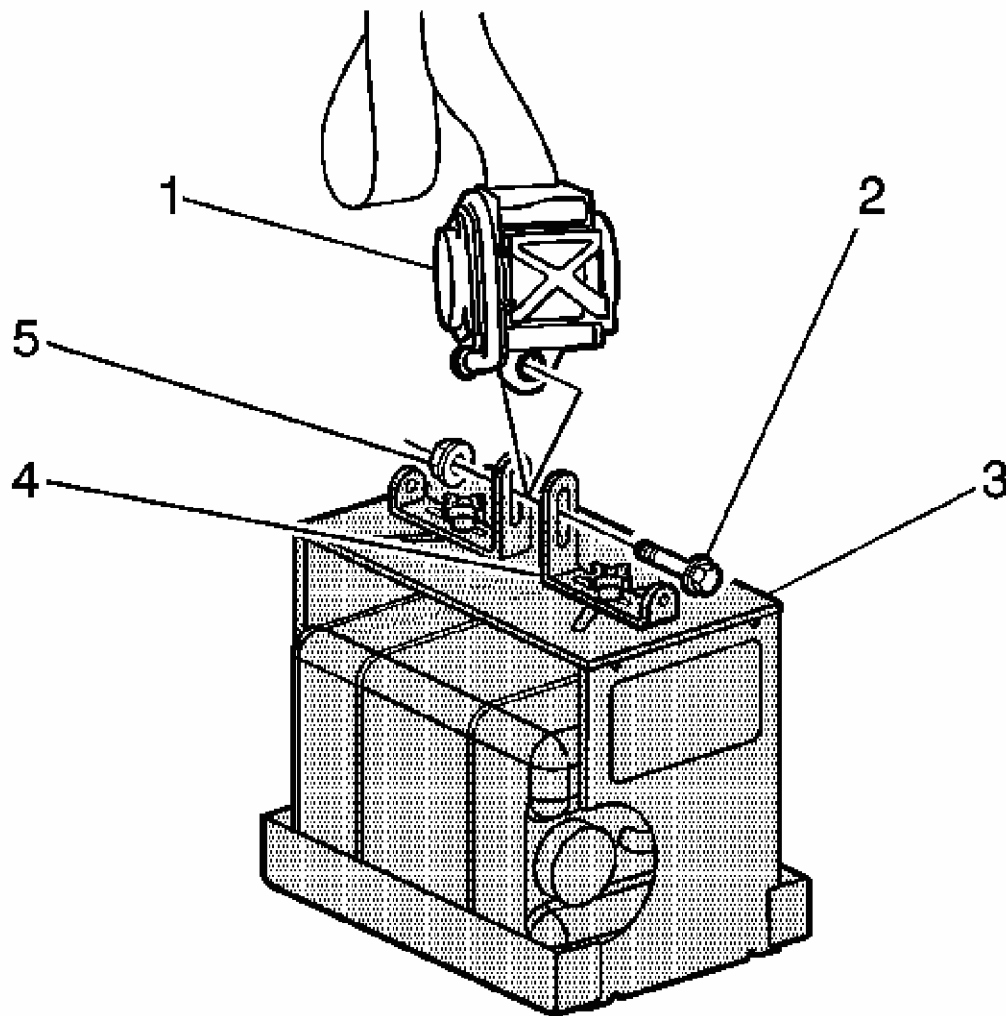
**Fig. 128: Proper Transportation of Seat Belt Pretensioner**  
**Courtesy of GENERAL MOTORS CORP.**

1. Turn OFF the ignition.
2. Remove the ignition key.
3. Put on safety glasses.
4. Remove the seat belt retractor pretensioner from the vehicle. Refer to **Seat Belt Retractor Pretensioner Replacement - Front**.
5. When carrying a seat belt retractor pretensioner to the deployment area, keep fingers clear of the seat belt webbing.



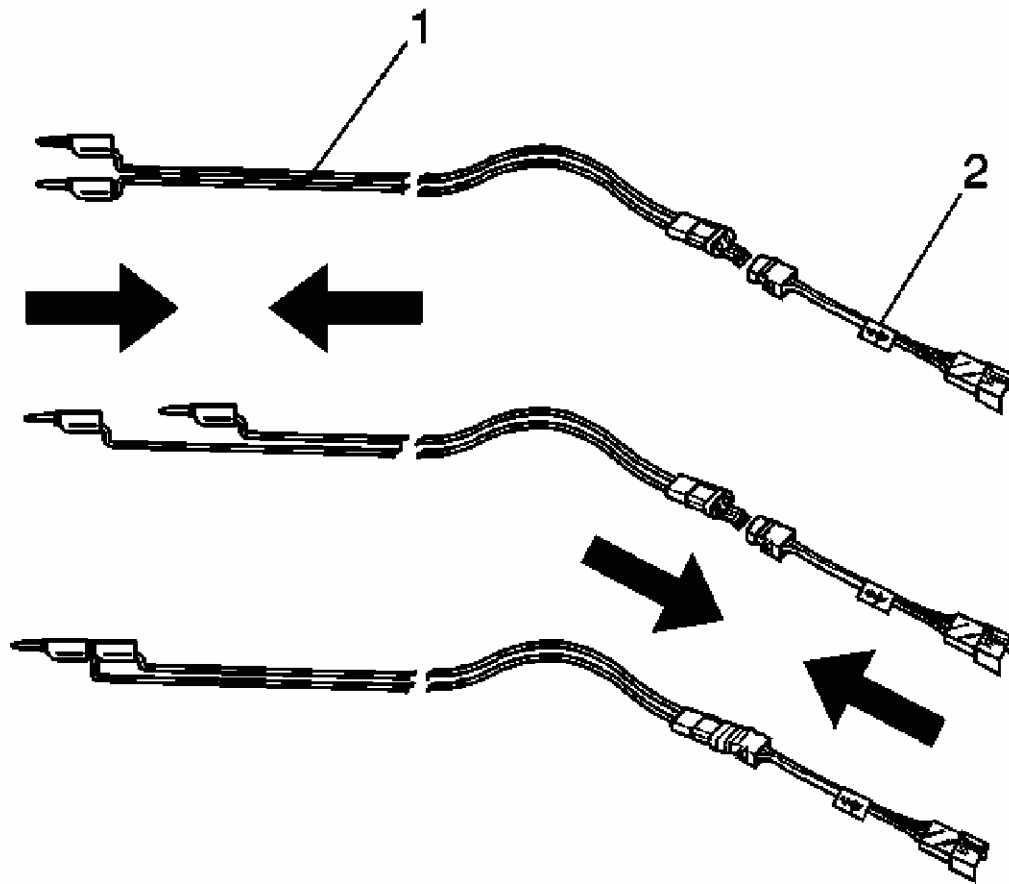
**Fig. 129: Illustrating Proper Space For Deployment Of Pretensioner**  
Courtesy of GENERAL MOTORS CORP.

6. Clear a space on the ground about 1.85 m (6 ft) in diameter (a) for deployment of the seat belt pretensioner. If possible, use a paved, outdoor location free of activity. Otherwise, use a space free of activity on the shop floor. Make sure you have sufficient ventilation.
7. Make sure no loose or flammable objects are in the area.
8. Place the **J 39401-B** in the center of the cleared area. See **Special Tools**.
9. Fill the fixture plastic reservoir with water or sand.



**Fig. 130: Seat Belt Pretensioner And SIR Deployment Fixture**  
**Courtesy of GENERAL MOTORS CORP.**

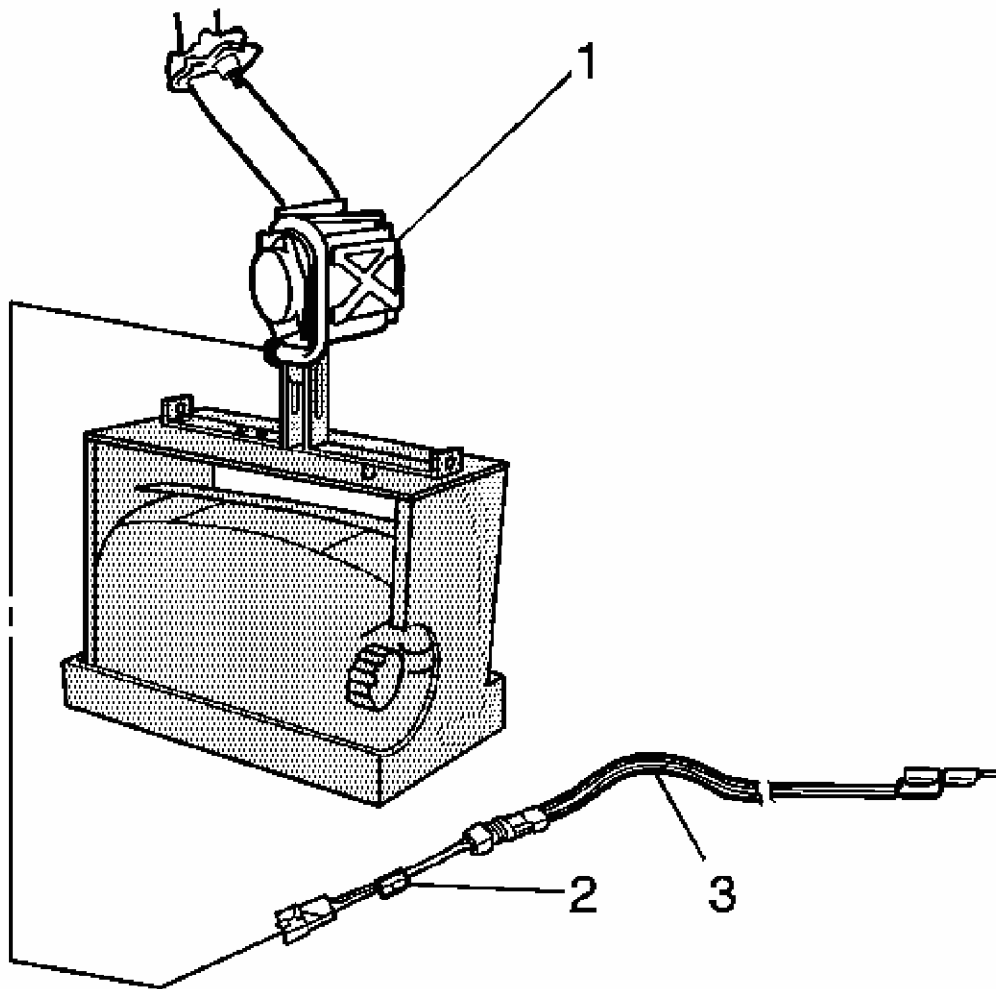
10. Mount the seat belt pretensioner (1) in the SIR deployment fixture (3) with the open end facing up using the following mounting method.
  - Adjust and secure the **J 39401-B** arms (4) to the deployment fixture, with the short slotted portions of the arms standing vertically and facing toward the center of the deployment fixture. See **Special Tools**.
  - To mount, use the proper size bolt (2) and nut (5) with washers in order to secure the seat belt pretensioner (1) to the deployment fixture brackets.
  - Securely tighten all fasteners prior to deployment.



**Fig. 131: Identifying SIR Deployment Harness & Adapter**  
Courtesy of GENERAL MOTORS CORP.

11. Inspect the **J 38826** and the appropriate pigtail adapter for damage. See **Special Tools**. Replace as needed.
12. Short the 2 SIR deployment harness (1) leads together using 1 banana plug seated into the other.





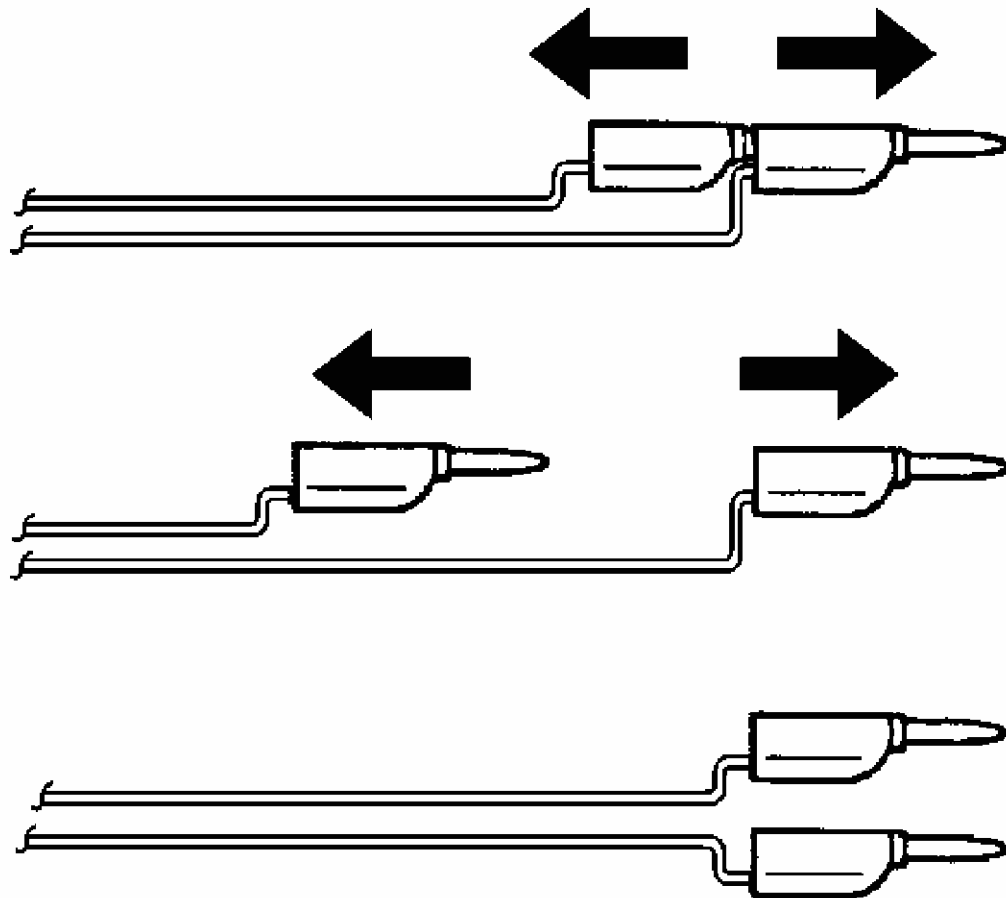
**Fig. 132: Identifying Seat Belt Pretensioner Connector, Adapter & Deployment Harness**

**Courtesy of GENERAL MOTORS CORP.**

13. Connect the appropriate pigtail adapter (2) to the SIR deployment harness (1).
14. Extend the SIR deployment harness and adapter to full length from the deployment fixture.
15. Connect the seat belt pretensioner connector to the adapter on the deployment harness.

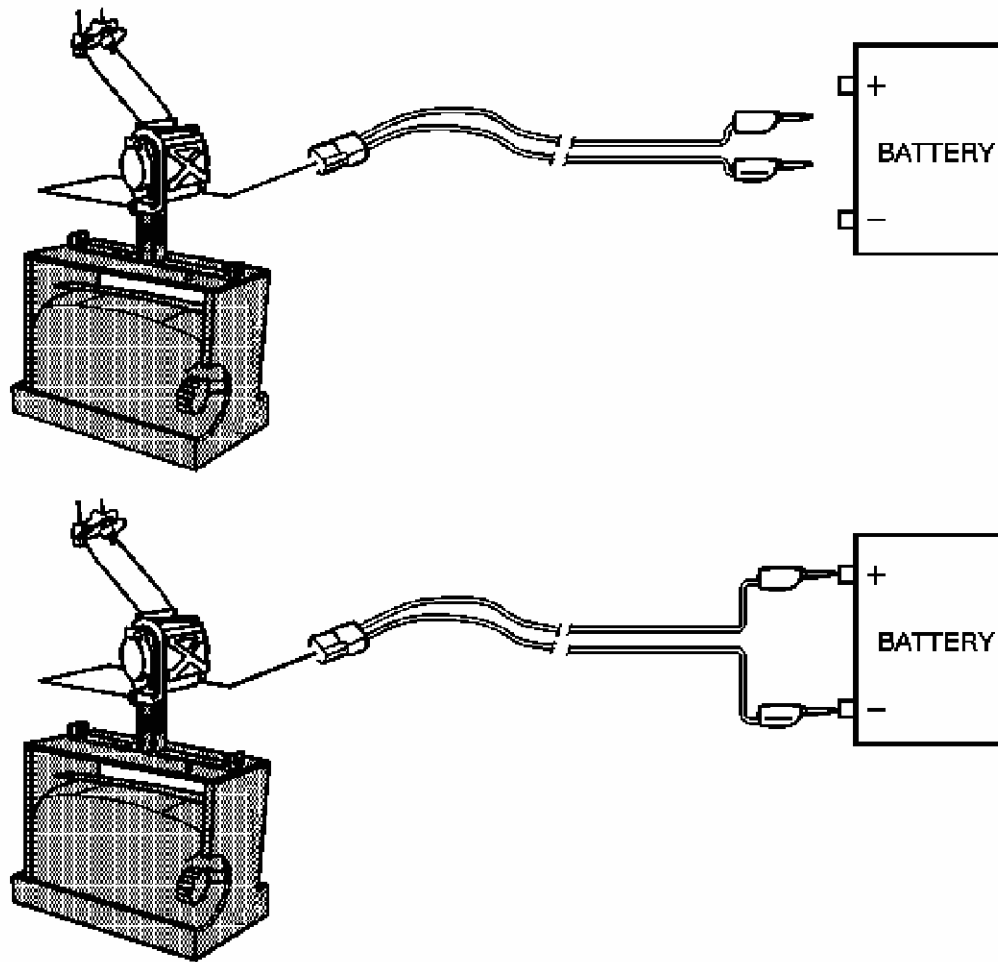
**IMPORTANT:** When deploying a seat belt retractor pretensioner, the rapid expansion of gas is very loud. Notify the people in the immediate area that a seat belt pretensioner will be deployed.

16. Clear the area of people.



**Fig. 133: Separating Banana Plugs**  
**Courtesy of GENERAL MOTORS CORP.**

17. Separate the 2 banana plugs on the SIR deployment harness.

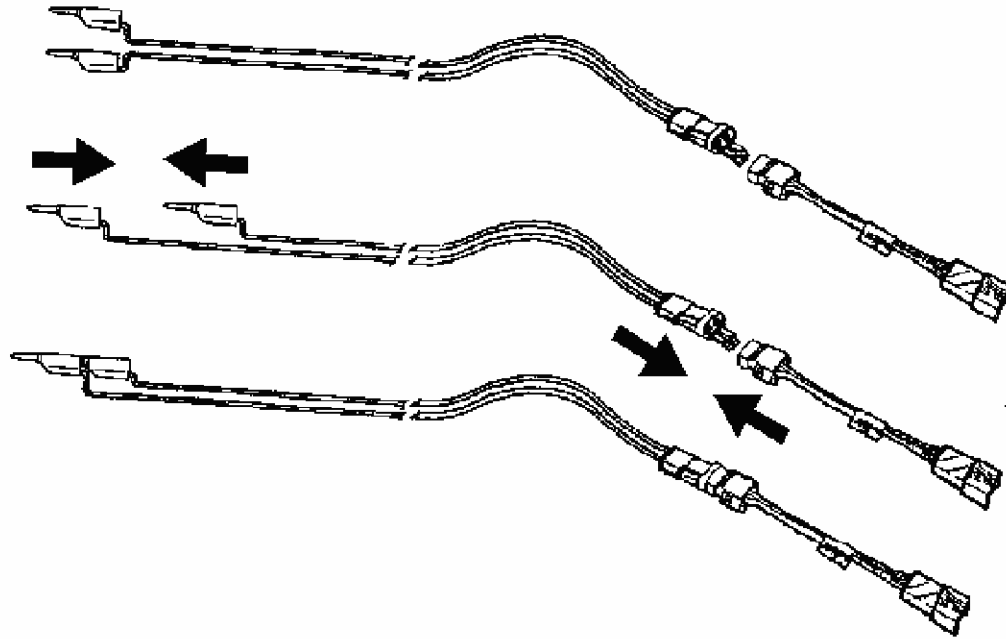


**Fig. 134: Deploying Seat Belt Pretensioner**  
**Courtesy of GENERAL MOTORS CORP.**

**IMPORTANT:** When the seat belt retractor pretensioner deploys, the deployment fixture may jump about 30 cm (1 ft) vertically. This is a normal reaction of the seat belt pretensioner due to the force of the rapid expansion of gas inside the pretensioner.

18. Place a 12 V minimum/2 A minimum power source, such as a vehicle battery, near the shorted end of the harness.
19. Connect the SIR deployment harness wires to the power source. Seat belt pretensioner deployment will occur when contact is made.
20. Disconnect the SIR deployment harness from the power source after the seat belt

retractor pretensioner deploys.



**Fig. 135: View Of Deployment Harness Leads**  
**Courtesy of GENERAL MOTORS CORP.**

21. Seat one banana plug into the other in order to short the deployment harness leads.
22. If the seat belt retractor pretensioner did not deploy, disconnect the adapter and discontinue the procedure. Contact the Technical Assistance Group. Otherwise, proceed to the following steps.
23. Put on a pair of shop gloves.
24. Disconnect the pigtail adapter from the seat belt retractor pretensioner as soon as possible.
25. Dispose of the deployed seat belt retractor pretensioner through normal refuse channels.
26. Wash hands with a mild soap.

## **DESCRIPTION AND OPERATION**

### **SIR SYSTEM DESCRIPTION AND OPERATION**

#### **SIR System Overview**

The supplemental inflatable restraint (SIR) system supplements the protection offered by the

occupants seat belt system. The SIR system contains several inflator modules located throughout the vehicle, i.e. steering wheel module, instrument panel (I/P) module, side impact modules and roof rail modules. In addition to inflator modules, the vehicle contains seat belt pretensioners that tighten the seat belt in the event of a collision, thus reducing the distance between the occupant and the seat belt when an inflator module is deployed. Each inflator module has a deployment loop that is controlled by the sensing and diagnostic module (SDM) mounted inside the vehicle. The SDM determines the severity of a collision with inputs from various sensor inputs located at strategic points on the vehicle. When the SDM detects a collision of sufficient force it will process the information provided by the sensors to further support air bag deployment. The SDM performs continuous diagnostic monitoring of the SIR system electrical components. Upon detection of a circuit malfunction, the SDM will set a diagnostic trouble code (DTC) and inform the driver by turning the AIR BAG indicator ON. The steering column and knee bolsters are designed to absorb energy and compress during frontal collisions in order to limit leg movement and decrease the chance of injury to the driver and passenger. After an air bag deployment, the SDM will send out a post-air message to the body control module (BCM). The BCM will unlock the doors and turn ON the emergency flashers, then turn ON the interior lights 15 seconds after receipt of this message.

An integral part of the SIR system is the passenger presence system (PPS). The PPS includes a module and several sensors for the purpose of assisting the SIR system in determining the presence and classification of an occupant in the passenger seat and therefor the need to enable or disable the I/P inflator module.

#### **Frontal SIR System Description**

The frontal SIR System consists of the following components:

- AIR BAG indicator located in the instrument panel cluster (IPC)
- Driver and passenger knee bolsters
- Inflatable restraint front end sensor (left/right)
- Inflatable restraint instrument panel (I/P) module
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint steering wheel module
- Inflatable restraint steering wheel module coil
- Inflatable restraint passenger AIR BAG ON/OFF indicator
- Inflatable restraint passenger presence system (PPS)
  - Pressure sensor
  - Seat belt tension sensor
- Inflatable restraint seat belt retractor pretensioners (left/right)
- Inflatable restraint wiring harnesses
- Steering wheel and column

- Seat position sensor (SPS)

A frontal collision of sufficient force will deploy the frontal air bags. The SDM contains a sensing device that converts vehicle velocity changes to an electrical signal. In the event of a frontal collision, the SDM receives a signal from the front sensors which assist the SDM in determining the severity of the collision. The SDM compares these signals to a value stored in memory. When the generated signals exceed the stored value, the SDM will cause current to flow through the deployment loops deploying the steering wheel inflator module, seat belt retractor pretensioners and depending on the PPS information simultaneously deploying the I/P inflator module. The SDM, I/P module, steering wheel module, steering wheel module coil, seat belt retractor pretensioner and the connecting wires make up the frontal deployment loops. The SDM continuously monitors the deployment loops for malfunctions and turns the AIR BAG indicator ON if a fault is detected.

#### **Inflatable Restraint Sensing and Diagnostic Module (SDM)**

The inflatable restraint sensing and diagnostic module (SDM) is a microprocessor and the control center for the SIR System. The SDM has 2 fused power inputs. One fuse is for the battery voltage and the other fuse is for the ignition voltage. The SDM uses vehicle battery voltage as its main power input. The SDM then uses the vehicles serial data communication system and the ignition voltage input for enabling or disabling the SIR systems. The SDM contains internal sensors and uses multiple external sensors mounted at strategic locations on the vehicle to determine the severity of a collision. In the event of a collision, the SDM compares the signals from the internal and external sensors to a value stored in memory. When the generated signals exceed the stored value, the SDM will cause current to flow through the appropriate deployment loops to deploy the inflator modules or seat belt pretensioners. If the force of the impact is not sufficient to warrant inflator module deployment, the SDM may still deploy the seat belt pretensioners. The SDM records the SIR system status when a deployment occurs and turns the AIR BAG indicator located in the instrument panel cluster (IPC) ON. As soon as 3 distinct deployment commands (representing different events) have been issued to any seat belt pretensioner or the SDM commands any inflator module to deploy once, the SDM needs to be replaced. The SDM performs continuous diagnostic monitoring of the SIR system electrical components and circuitry when the ignition is turned ON. If the SDM detects a malfunction, a DTC will be stored and the SDM will command the AIR BAG indicator ON, notifying the driver that a malfunction exist. In the event that ignition positive voltage is lost during a collision, the SDM maintains a 23-volt loop reserve (23 VLR) for deployment of the air bags. It is important when disabling the SIR system for servicing or rescue operations to allow the 23 VLR to dissipate, which could take up to 1 minute.

#### **Inflatable Restraint Passenger Presence System (PPS)**

**IMPORTANT: The Passenger Presence System (PPS), heated seat element (if equipped) and the seat bottom foam cushion is a calibrated unit and cannot be service separately. After repairing or**

**replacing the PPS, the system must be rezeroed in order to function properly. The seat belt tension sensor, part of the PPS, is serviced separate from the PPS and is integral to the seat belt buckle.**

The PPS is used to monitor the weight of an occupant on the front outboard passenger seat and communicate the status to the sensing and diagnostic module (SDM) whether to enable or suppress the deployment of the instrument panel (I/P) module and the right front side impact module. The PPS consist of an electronic control module, silicone filled sensor pad, pressure sensor, seat belt tension sensor, wiring harness and PASSENGER AIR BAG ON/OFF indicators. The silicone filled sensor pad is located under the passenger seat foam cushion and is connected by a hose clamped to the pressure sensor. The weight of the occupant sitting in the front passenger seat is measured as a pressure change within the bladder by the pressure sensor. The pressure sensor sends a voltage signal to the PPS module. If the pressure from the occupants weight is less than a specified value, the PPS module will send a suppress signal to the SDM to disable the I/P and the right front side impact modules. If the pressure from the occupants weight is higher than a specified value, the PPS module will send an enable signal to the SDM to enable the I/P and the right front side impact modules. The inflatable restraint seat belt tension sensor is mounted within the buckle of the passenger seat belt and provides an input to the PPS. When an infant car seat is properly restrained on the front passenger seat, the seat belt is tightly secured through the car seat. The seat belt pulls on the tension sensor and changes the voltage signal to the PPS module. When the PPS determines a child safety seat is present, it will request that the SDM suppress the deployment of the I/P module and turn the passenger air bag OFF indicator ON. In addition, the SDM may also disable the passenger side and roof rail air bags. The PPS monitors itself, including it sensors for faults and will set a DTC if a fault is detected. Using serial data communications, the PPS will notify the SDM of a fault and the SDM will suppress the deployment of the I/P module and request the instrument panel cluster (IPC) to turn ON the AIR BAG indicator located on the IPC and the passenger air bag OFF indicator. By turning ON either the ON or OFF indicators, the customer is notified of the enable/disable status.

#### **Inflatable Restraint PASSENGER AIR BAG ON/OFF Indicator**

The PASSENGER AIR BAG ON/OFF indicators is used to notify the driver and passenger when the instrument panel (I/P) and the right front air bag is enabled or disabled.

#### **AIR BAG Indicator**

The AIR BAG indicator, located in the instrument panel cluster (IPC), is used to notify the driver of SIR malfunctions and to verify that the inflatable restraint sensing and diagnostic module (SDM) is communicating with the IPC. When the ignition is turned ON, the SDM is supplied with ignition positive voltage. The SDM requests the IPC to flash the AIR BAG indicator 7 times. While flashing the indicator, the SDM conducts tests on all SIR system components and circuits. If no malfunctions are detected, the SDM will communicate with the

IPC through serial data communications to command the AIR BAG indicator OFF. The SDM provides continuous monitoring of the air bag circuits by conducting a sequence of checks. If a malfunction is detected the SDM will store a DTC and command the IPC to turn the AIR BAG indicator ON via serial data communication. The presence of a SIR system malfunction could result in non-deployment of the air bags or deployment in conditions less severe than intended. The AIR BAG indicator will remain ON until the malfunction has been repaired.

#### **Dual Stage Inflator Modules**

Dual stage inflator modules contain a housing, inflatable air bag, 2 initiating devices, canister of gas generating material and, in some cases, stored compressed gas. The 2 initiators are part of the frontal deployment loop. The function of the frontal deployment loops are to supply current through the steering wheel and instrument panel (I/P) modules to deploy the air bags. The steering wheel and instrument panel (I/P) modules have 2 stages of deployment which varies the amount of restraint to the occupant according to the collision severity. The inflatable restraints sensing and diagnostic module (SDM) determines whether to initiate stage 1 only or both stage 1 and stage 2 deployment. For moderate frontal collisions, the inflator modules deploy at less than full deployment (low deployment) which consists of stage 1 of the inflator module. For more severe frontal collisions, a full deployment is initiated which consists of stage 1 and stage 2 of the inflator module. An exception to full deployment may occur on the passenger side due to an input from the seat position switch (SPS) on the passenger seat. If the passenger seat is forward of a predetermined position with the passenger air bag enabled only stage 1 will deploy. With the more severe frontal collision, the SDM also uses the seat position sensor to determine whether to initiate only stage 1 or both stage 1 and stage 2 deployment of the I/P air bag. The current passing through the initiators ignites the material in the canister producing a rapid generation of gas and in some cases, the release of compressed gas. The gas produced from this reaction rapidly inflates the air bag. Once the air bag is inflated, it quickly deflates through the air bag vent holes and/or the bag fabric.

Each dual stage inflator module is equipped with a shorting bar located in the connectors of the module. The shorting bar shorts the inflator module deployment loop circuitry to prevent unwanted deployment of the air bag when it is disconnected.

#### **Seat Position Sensor (SPS)**

The inflatable restraint seat position sensor (SPS) is used to determine the proximity of a front passenger seat position with respect to the inflatable restraint I/P module. The SPS is a hall effect sensor that is mounted on the seat track of the front passenger seat. The SPS is connected to the sensing and diagnostic module (SDM) with a low reference and a signal circuit. The SDM uses the state of the SPS to determine the need for a stage 2 deployment of the inflatable restraint I/P module. When the seat is in the forward position, stage 2 deployment is disabled. When the seat is in the rearward position, stage 2 deployment is enabled. The SDM monitors the passenger seat position switch signal circuit and if a fault is detected, the SDM will set a DTC and default to disabling stage 2 inflatable restraint I/P



module deployment.

#### **Inflatable Restraint Steering Wheel Module Coil**

The steering wheel module coil is attached to the steering column and is located under the steering wheel. The steering wheel module coil consists of 2 or more current-carrying coils. The coils allow the rotation of the steering wheel while maintaining continuous electrical contact between the steering wheel module deployment loop and the steering wheel module. Two coil wires are used for each steering wheel module deployment loop. Additional coil wires are used for accessories that are attached to the steering wheel, depending on the vehicle content. The steering wheel module coil connector is located near the base of the steering column. The connector contains a shorting bar that shorts the steering wheel module coil deployment loop circuitry to prevent unwanted deployment of the steering wheel module when the connector is disconnected.

#### **Steering Wheel and Column**

The steering wheel and column are designed to absorb energy when driver contact is made with steering wheel or inflated module. In a collision, the driver may contact the steering wheel directly or load the steering wheel and column through the inflated module. When the driver applies load to the inflator module or the steering wheel, the column will compress downward, absorbing some of the impact and helping to reduce bodily injuries to the driver. The steering wheel and column must be inspected for damages after a collision.

#### **Inflatable Restraint Front End Sensors**

The front end sensor is equipped on vehicles to supplement the SIR performance. The front end sensor is an electronic sensor and is not part of the deployment loops, but instead provides an input to the inflatable restraint sensing and diagnostic module (SDM). The front end sensor can assist in determining the severity of some frontal collisions. The SDM contains a microprocessor which performs calculations using the measured accelerations and compares these calculations to a value stored in memory. When the generated calculations exceed the stored value, the SDM will cause current to flow through the deployment loops deploying the necessary air bags or pretensioners.

#### **Inflatable Restraint Seat Belt Retractor Pretensioner**

The seat belt retractor pretensioners contain a housing, a seat belt retractor, the seat belt webbing, an initiating device and a canister of gas generating material. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the inflatable restraint sensing and diagnostic module (SDM) will cause current to flow through the deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas and the release of compressed gas, if present. The gas produced from this reaction deploys the seat belt pretensioner and retracts the seat belt webbing, which removes slack in the seat belt.

Depending on the severity of the collision, the seat belt retractor pretensioner may deploy without the frontal inflator modules deploying or they will deploy immediately before the frontal inflator modules deploy. As soon as 3 distinct deployment commands, representing different events, have been issued to any belt pretensioner, the SDM shall be considered to not be reusable.

Each seat belt retractor pretensioner is equipped with a shorting bar located on the connector of the pretensioner. The shorting bar shorts the seat belt pretensioner deployment loop circuitry to prevent unwanted deployment of the pretensioner when servicing the seat belt pretensioner.

#### **Inflatable Restraint Wiring Harness**

The inflatable restraint wiring harness connects the inflator modules, inflatable restraint sensing and diagnostic module (SDM), sensors, deployment loops and the serial data communication circuit together using weather-packed connectors. SIR connectors are yellow for easy identification. When repairing SIR wiring harnesses, follow the proper testing and repair procedures listed in the service information.

#### **Knee Bolster**

The knee bolsters are designed to help restrain the lower torso of front seat occupants by absorbing the energy through the front seat occupants upper legs. In a collision, the front seat occupants legs may come in contact with the knee bolsters. The knee bolsters are designed to crush and deform, absorbing some of the impact and helping to reduce bodily injuries. The driver and passenger knee bolsters are located in the lower part of the instrument panel and must be inspected for damages after a collision.

#### **Side SIR System Description**

The side SIR system consists of the following components:

- AIR BAG indicator located in the instrument panel cluster (IPC)
- Inflatable restraint sensing and diagnostic module (SDM)
- Inflatable restraint seat belt retractor pretensioners (left/right)
- Inflatable restraint side impact modules (LF/RF)
- Inflatable restraint side impact sensors (SIS) (left/right)
- Inflatable restraint roof rail modules (left/right)
- Inflatable restraint wiring harnesses

The side impact modules are located in the outside portion of the front seat backs and the roof rail modules are located under the headliner extending from the front windshield pillar to the rear window pillar. The side impact modules and the roof rail modules contain a housing, inflatable air bag, initiating device and a canister of gas generating material. The initiator is

part of the side impact and roof rail module deployment loop. When a side impact of sufficient force occurs the SIS detects the impact and sends a signal to the SDM. The SDM compares the signal received from the SIS to a value stored in memory. When the generated signal exceeds the stored value, the SDM will cause current to flow through the side deployment loop deploying the side and the roof rail air bags. The SDM, side impact modules, roof rail modules and the connecting wires makeup the side deployment loops. The SDM continuously monitors the deployment loops for malfunctions and turns the AIR BAG indicator ON if a fault is present.

Each side impact and roof rail module is equipped with a shorting bar located on the connector of the module. The shorting bar shorts the side impact and roof rail modules deployment loop circuitry to prevent unwanted deployment of the air bag when servicing the inflator module.

**Inflatable Restraint Side Impact Sensor (SIS)**

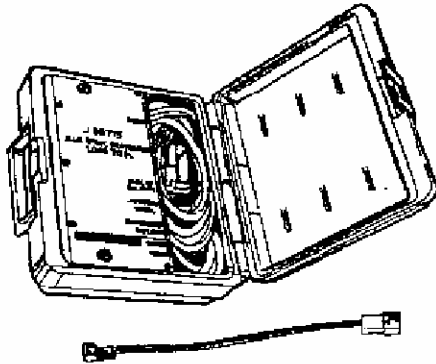
The side impact sensor (SIS) contains a sensing device which monitors vehicle acceleration and velocity changes to detect side collisions that are severe enough to warrant air bag deployment. The SIS is not part of the deployment loop, but instead provides an input to the inflatable restraint sensing and diagnostic module (SDM). The SDM contains a microprocessor that performs calculations using the measured accelerations and compares these calculations to a value stored in memory. When the generated calculations exceed the stored value, the SDM will cause current to flow through the deployment loops deploying the side and the roof rail air bags.

**SPECIAL TOOLS AND EQUIPMENT****SPECIAL TOOLS****Special Tools**

Illustration	Tool Number/Description
	J 38715-A SIR Driver/Passenger Load Tool

## 2006 Buick Lucerne CXS

2006 RESTRAINTS SIR - Lucerne

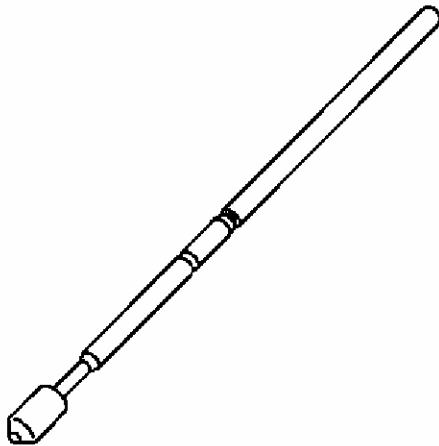
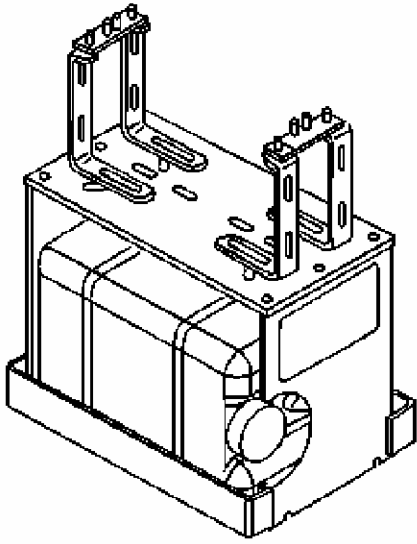


J 38826  
SIR Deployment Harness

J 39401-B  
SIR Deployment Fixture

## 2006 Buick Lucerne CXS

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J 42640  
Steering Column Anti-Rotation Pin

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